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ARCHITECTURE

ENGINEERING

DECORATION

CONSTRUCTION

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[Gelatine Print issued only with Gelatine and Imperial editions.]

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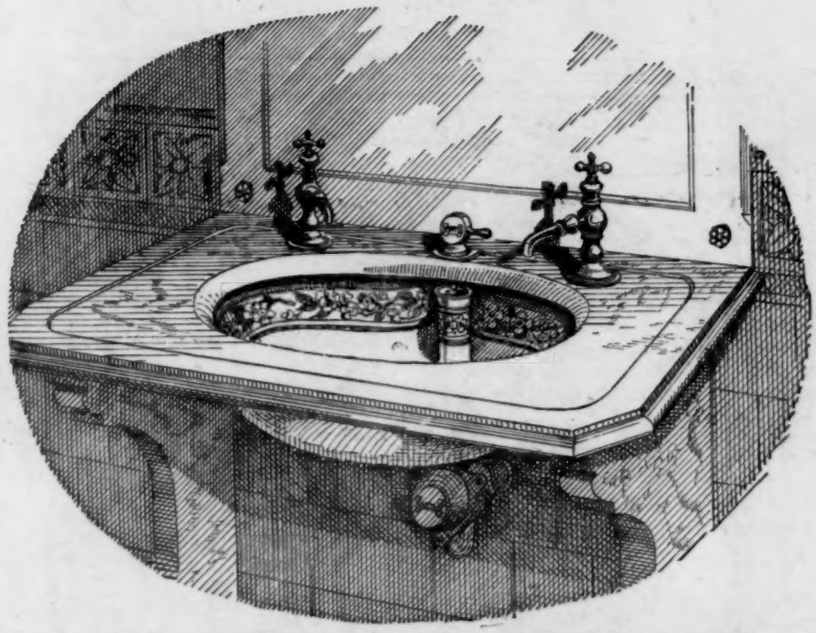
THE SANITAS LAVATORIES.

(BASIN, BATH-TUB, PANTRY-SINK.)



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Beware of infringements which are inferior as well as illegal. Accept only the genuine and original standpipe lavatories which are stamped with the name "Sanitas."

THE SANITAS MANUFACTURING COMPANY,

MAIN OFFICE: 207 TREMONT STREET, BOSTON, MASS.

Branch Offices: 64 Gold Street, New York, N. Y. 229 Walnut Street, Cincinnati, O. 47 to 49 Dearborn Street, Chicago Ill.

THE AMERICAN ARCHITECT AND BUILDING NEWS.

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AN extraordinary story comes from Brooklyn, N. Y., to the effect that a building is about to be erected there which will have a tower five hundred and forty feet high. The structure to be so adorned is the "Union Biblical Institute," which is to be built for the excellent purpose of providing a non-sectarian place of education for young men intended for the ministry. Why such a building should need a tower higher than the Washington Monument is a question which may be debated in connection with that of the sort of theology which will be inculcated in it; but it seems that the upper portion is to be utilized for an observatory. To judge from the interesting design, reproduced from the drawing of the architect, Mr. Frank K. Irving, in one of our exchanges, we should say that this part, at least, of the programme has been somewhat hastily adopted. The top of the tower, instead of the hemisphere which indicates an astronomical purpose, is a high, pointed dome, octagonal in plan, surmounted by a cupola forty feet high, which would effectually cut off the view from the observatory of everything within a considerable radius of the zenith. Notwithstanding this rather important astronomical defect, we are told that the observatory is to be equipped with a telescope forty-eight feet long, which, as the observatory, according to the scale of the drawing, is only about thirty feet in diameter, and as its use in a vertical position is precluded by the cupola, we suppose will be stuck out of a window when the students wish to sweep the heavens with it, or make computations of the orbit of Mars, or engage in other scientific problems of the sort. Such as it is, however, the plans for the building have already been filed, land has been bought, and a million and a half is said to have been subscribed by "a few wealthy gentlemen" to carry it into execution.

A CURIOUS structure is said to be proposed in New York. There is already in that city a large colony of Chinamen, who are governed by a sort of representative body of their own. This Chinese Municipal Council has for a long time occupied an old house in Mott Street, where a considerable amount of public business was carried on for the benefit of the Mongolians. Now, the house having become too small for the uses to which it is put, it is to be torn down, and replaced by another which is to be designed in the Oriental manner, and built mainly, if not entirely, by Chinese workmen. Whether the New York Inspector of Building will approve the sort of architecture current in Pekin remains to be seen, but if not, the style can probably be modified to suit his requirements. It is said that a temple, or "joss-house," occupied a portion of the old building. If so, a liberal part of the new one is likely to be fitted up for the same purpose, and architects and others who take an interest in the externals of religious beliefs will find a new subject for study provided in the metropolis.

ONE of the most promising undertakings to which Congress has this year voted aid is that by which the United States Geological Survey is to ascertain the extent of arid lands in the United States which can be redeemed by irrigation, and to devise means providing the necessary water-supply on an extensive scale. As we understand it, a plan seems to be in view by which the surplus water of the tributaries of the Mississippi are to be collected in overflow reservoirs, and utilized for supplying a portion of the dry district, while the remainder of the territory is, we suppose, to depend upon the Colorado and Rio Grande systems. However the work of irrigation may be effected, it seems likely, if thoroughly done, to transform completely the southwestern territories. The vast tract which was marked in the school geography of our boyhood, as the "Great American Desert," is now, we believe, known to have been, not many centuries ago, one of the most fertile regions of the world, and its dry dust, properly moistened, still forms a deep, rich loam, perfectly suited for the highest cultivation. Through what influences the original water-supply has been diminished, and the soil reduced to useless dust, is not, perhaps, clearly understood, but the effect of restoring moisture to it is seen in various places, where artificial irrigation has been practised, and particularly in Utah, where the Mormon farms about the Great Salt Lake are said to be the most productive tracts of land in the world. If the whole of the desert basin, capable of being reached by irrigating canals, should be reclaimed, it is estimated that the area of cultivated land in the United States would be increased by more than one-half, and, even if the new farms were not of extraordinary fertility, their value, at a fair estimate, will be nearly three thousand million dollars, for agricultural purposes, without counting the value of the buildings, railways and other improvements which would be accumulated with the development of the country. Together with this development should, if what we are told is true, come a curious modification of the climate, not only of the irrigated region, but of a vast area lying near it. It is said, we do not know how truly, that the Great Salt Lake, which, like the Caspian Sea and the other salt lakes of Asia, had been rapidly diminishing in extent by evaporation, until the Mormon settlement, is now, since its banks have been cultivated, rising again, so that houses which once stood on the shore have been moved back, to keep them from being surrounded by the advancing water. If a comprehensive system of irrigation should be followed by similar results, we might fairly expect to see Arizona, New Mexico, Colorado and Utah, which now, in the best portions furnish a bare subsistance to twenty or thirty cattle to the square mile, converted into a moist, semi-tropical region, dotted with great lakes, from which balmy breezes would blow eastward all over the country.

LA SEMAINE DES CONSTRUCTEURS thinks that the Argentine Republic carries off the palm for extensive building operations. While Philadelphia and New York, with their two or three thousand new houses a year, seem to us tolerably enterprising in this respect, it is said that near Buenos Ayres a whole town is being built at once, consisting of eight hundred houses with a town-hall, post-office, court-house, library, theatre, and church, several hotels, office-buildings and restaurants, a tramway line and a system of sewers. The new town is intended for Italians, of whom great numbers emigrate to Buenos Ayres, and, out of compliment to them, is to be named Garibaldi, while the church is dedicated to Saint Rose, the patron saint of Garibaldi's mother, and preparations have been made for the establishment of a newspaper, the *Garibaldino*, the first number of which will appear on the day that the new town is opened to the public.

WE are often indebted to *Le Génie Civil* for curious statistics. One of the most recent ones which it publishes is the census of horses and mules in different parts of the world. From this it seems that Russia is above all others the country of horses, containing nearly twenty-two millions, or about one to every four inhabitants. The United States comes next, with nine and one-half millions, or about one to every six inhabitants; and the Argentine Republic third, with four million horses, the number of these animals in proportion to that of human beings, being large in all the South American States. Of the European countries, outside of Russia, Austria-

Hungary supports most horses, the number being three and one-half millions, or about one to ten inhabitants; while Germany, with a larger population, has only about three and one-third million horses. France possesses somewhat less than three millions, and England about the same number, but France counts three hundred thousand mules, while in England these hybrids are so rare as not to be worth enumerating. In Spain the mules outnumber the horses nearly four to one, the number of both sorts combined being about three millions. Holland, naturally enough, possesses but one hundred and twenty-five thousand horses, or one to thirty inhabitants, ordinary transportation being to a great extent effected by canal boats, which do not even always need horses to draw them, women being frequently harnessed at the end of the tow-rope.

ANOTHER interesting bit of information relates to an American industry, transported across the sea. In 1866, it occurred to Mr. George H. Page, of Dixon, Illinois, that a manufactory of condensed milk might with advantage be established in German Switzerland, the most pastoral of all countries. He built a little factory at Charn, at the outlet of the Lake of Zuy, and engaged the milk of a few cows. The enterprise prospered, and in ten years the factory consumed regularly the milk of two hundred and sixty-three cows: and in 1887, twenty years after the establishment of the business, it used the milk from more than seventeen thousand cows. It would hardly have been practicable either to utilize so much of such a perishable raw material in one factory, or to feed so many cows within reach of a single group of buildings, and, in fact, before this time six branch manufactories had already been established, of which three are in England, one in Germany, and one in New York State. In connection with the parent establishment at Charn, is a can factory, which supplies the tin boxes in which the condensed milk is put up. That the consumption of these is sufficient to keep the can factory busy may be inferred from the fact that last year more than twenty-nine million cans of the condensed milk were sold, the receipts from sales being nearly two million dollars. The parent factory, or rather, group of factories, is managed according to the most enlightened modern views. Schools, as well as houses, are provided for the workmen and their families, and funds for insurance and relief are established.

CONSIDERING that, according to Professor Riley, this is the year for the appearance of the seventeen-year locusts in this country, while many of the western states, particularly Kansas, are annually attacked by swarms of grasshoppers of other kinds, it may be of interest to learn from *Le Génie Civil* how such insects are fought in Spain and Algeria, where they are just now so numerous as to threaten the destruction of the crops. The most effective weapon now in use against them in Algeria is called the cypriote apparatus, and is the same as that employed by the British administration in the island of Cyprus a few years ago. The main element of the apparatus is simply a roll of yard-wide cotton cloth, about sixty yards long, stretched across the route which a column of grasshoppers appears to be pursuing, and held in a vertical position by stakes, while the lower edge, by means of cords and smaller stakes, is kept so close to the ground that the insects cannot crawl under it. On the upper edge of the cloth is sewed a strip of oiled or varnished material, six or seven inches wide and on the side next the grasshoppers, pits, a yard wide, two yards long, in a direction parallel with the screen, and three or four feet deep, are dug in the ground at intervals, and the upper edge of each pit is trimmed with a strip of zinc, ten or twelve inches wide, inclined downward. All these preparations are made while the head of the insect column is still a hundred yards away, and, meanwhile, men are sent out, who stand on each side of the column, and narrow it by flapping their clothes, so as to frighten the grasshoppers on the outside, and make them crowd closer to the centre, at the same time that they direct its march toward the middle of the cloth screen, which, in the case of a very large swarm, is made of extra length by joining two, and is then set in the shape of a wide V, with the opening toward the insects.

ON arriving at the screen, the grasshoppers try to fly over it, but the precaution is taken to spread it during the early morning, when their movements are sluggish, and their wings will not carry them to the necessary height. Failing in the attempt to fly, the insects than crawl up the cloth, until they reach the smooth, varnished edging, on which their claws can take no hold, so they fall back again. After a few such fruitless attempts, they decide to circumnavigate the obstacle at the ground-level, instead of trying to surmount it, and a general lateral movement takes place. Some of those who first arrived have fallen directly into the pits, and are prevented from getting out by the zinc rim; and the lateral march brings the others to the same fate. When the pits are half-full, Arabs with heavy feet and strong nerves are appointed to get in and trample on the grasshoppers, and, finally, the pits are refilled with earth, to which, where practicable, lime or some other disinfectant is added. By this simple apparatus, if the pits are made deep enough, and the whole is carefully set and well attended, an entire army of grasshoppers may be exterminated in an hour or two, and the screen taken away for service elsewhere. Up to June fifteenth of this year, it is estimated that four hundred millions of grasshoppers had been destroyed by means of it in Algiers. Of course, there are hundreds of millions left, but the Algerians are encouraged to persevere by the knowledge that the British, in five years from their occupation of Cyprus, and at an expenditure of less than three hundred thousand dollars, practically extirpated the insects from the island, which had been annually ravaged by them for generations, and now, at a yearly cost of about eight thousand dollars, keep the fields perfectly protected, much to the satisfaction of the natives, who have come to regard their new masters as benefactors rather than invaders. In Spain although the "Cypriote apparatus" is coming into use, millions of the insects have been destroyed with gasoline. Early in the morning, while the grasshoppers are benumbed with the night's cold, and are lying in the furrows which are, in many cases, made purposely for them, squads of men walk beside them, pouring gasoline on them from a watering-pot. As each comes to the end of his furrow, he lights the gasoline with a match, and the grasshoppers are consumed in a moment. Of course, this method wastes the gasoline which may soak into the ground, and a watering-pot has been introduced by which fire is prevented from passing back into the body of the pot, so that the gasoline can be lighted at the spout, and the grasshoppers watered with fire.

AMERICANS are often said to enjoy nothing so much as personalities in regard to people of note, and, judging from the sort of news provided for them by the foreign correspondents of the newspapers, there must be some reason for saying so. We, therefore, make no apology for mentioning that the widow of that remarkable architect and artist, Mr. E. W. Godwin, has just been married to the American artist, Whistler. The widow of another architect and artist of equal talent, but very different temper, Mr. W. Eden Nesfield, has happily escaped a cruel experience in the shape of a contest for the property left her by her husband. Just two years ago Mr. Nesfield made a will, leaving property to the amount of about one hundred and twenty-five thousand dollars to various persons, including his wife, who was made residuary legatee. One year ago, in August, 1887, another will was made, leaving the whole property to Mrs. Nesfield, and constituting her sole executrix and universal legatee. In March, 1888, Mr. Nesfield died. On the presentation of the will of 1887 for probate, it was opposed by Henry Nesfield, brother of the deceased artist, on the ground that the testator was not of sound mind when it was excuted; and the will of 1886 was submitted as the true one. Three eminent lawyers were engaged by each side, and preparations were made for a long struggle, but, on the calling of the case in court, three weeks ago, the counsel for Mr. Henry Nesfield rose, and said that within a few days his client had had an opportunity of looking through the documents in the case, and had come to the conclusion that he ought to offer no further opposition to the proof of the will of 1887, and that no evidence need be brought forward except that to show the due execution of the will submitted by Mrs. Nesfield, in order that probate might issue. The court accordingly confirmed the will of 1887, the parties agreeing that each side should pay its own costs. Whether this singular termination of the dispute means that the brother was bought off, or that he was really magnanimous enough, after satisfying himself of the soundness of the will of 1887, to withdraw his opposition from conscientious motives, we are, of course, unable to say, but we prefer to believe the latter.

BUILDERS' HARDWARE.[1]—IV.

SCREWS.

Fig. 8. Fig. 9. Fig. 10. Fig. 11. Fig. 12.

THE substitution of screws for nails in building operations is one of the most marked features of modern work, and is, in a way, indicative of the changes that have come about since Mediæval times. In those days men built for eternity; now, the object is to build so that it is possible to take the work apart; and nothing shows more clearly the extent to which this idea is carried than the variety of uses to which screws are put. There is, however, another way of looking at the change, and a more practical one, too, for screws certainly have a great many advantages which nails never could possess. They are much more secure when in place; they are neater in appearance; they require but little more labor in driving than nails, and can, at any time, be removed without injuring the material into which they are screwed. Some who have had trouble in removing old screws which had rusted into hard-wood work may object to the last statement. An old carpenter however, once told us of a very simple way to remove even the most obdurate screw: if a red-hot poker is held against the head of the screw for a few moments, the heat will expand the metal, loosening it from its hold on the wood, after which it can be readily unscrewed.

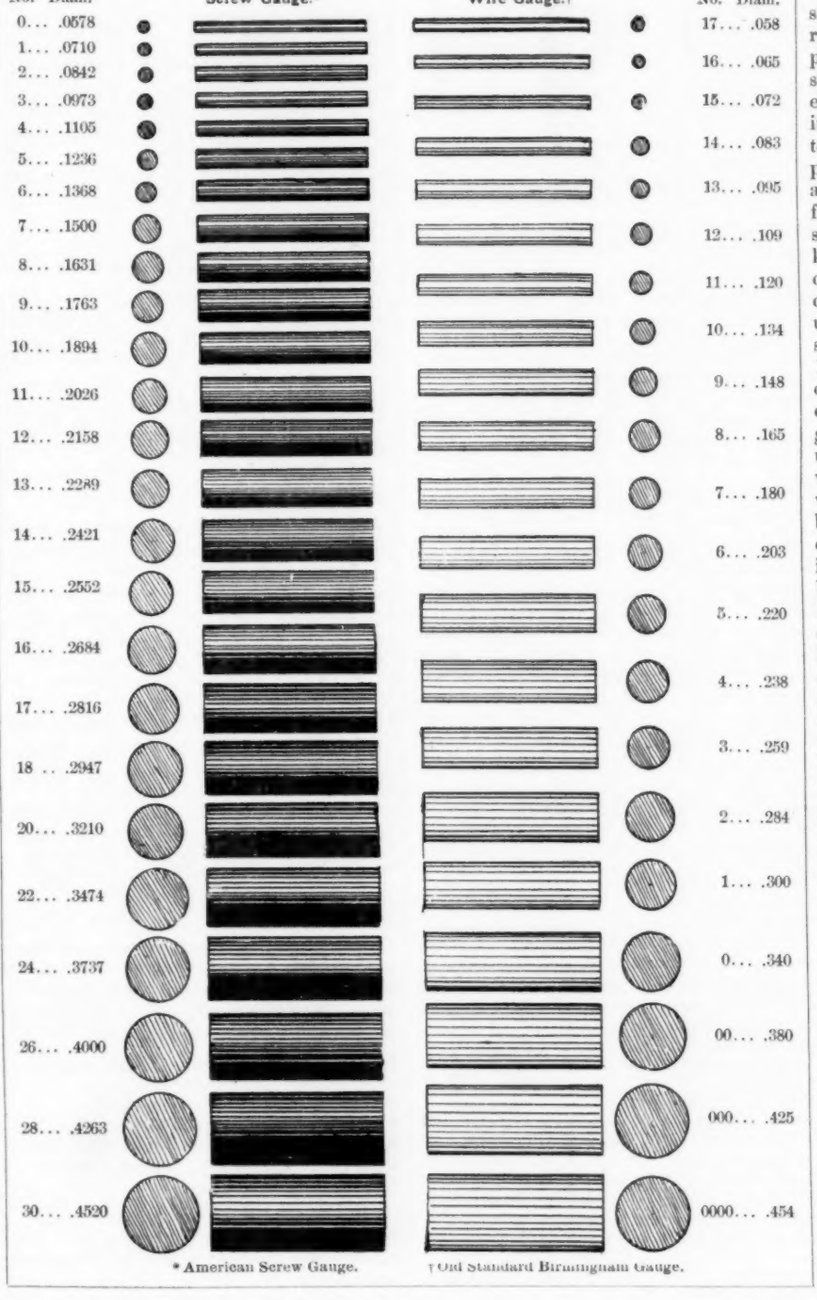
The improvements in the processes of manufacture of screws have been even more marked than those which have been noted in regard to nails. The blanks for screws were formerly cut out by hand. The first improvement was to cut them from rolled round iron, the heads being formed by pressing the blanks into a die while hot, and the threads cut with a file, a very laborious operation which resulted in a very poor quality of screw. The screw-working machinery, as at present in use, has very largely been designed by Americans: the blanks are cut and headed from coils of wire on one machine; another machine takes the pieces, gives the proper shape to the head and neck, turns the shank, and finishes the screw. It has been claimed that the entire operation necessary to turning out a perfected screw is so economical in its action, that the fluctuations in the first cost of the crude wire will often equal the total cost of manufacture.

The most important improvement which has been made in their manufacture is the application of the gimlet point, by means of which a screw can be turned into the wood without the aid of a gimlet or auger. It seems so natural now to us that it is difficult to understand why the world was so long contented with the poor productions of half a century ago.

The form and style of the ordinary screw, as at present in use, seem so perfect in every respect that it would be difficult to suggest any improvements. There are, however, a few forms of patent screws in the market which may be of interest in this connection. Figure 8 illustrates a screw, patented in 1873, fitted with a drill point instead of the ordinary gimlet point. Figure 9 is a screw with a thread somewhat like that of a bit, the thread, however, diminishing in pitch from the bottom to the top. Figure 10 is a form of coach-screw, having threads of a curved cross-section and provided with a wedge-shaped point, which allows the screw to be partly driven into place with a hammer. Figure 11 is essentially the same as the ordinary screw, except that the point is flattened, and it has a circular cutting-edge. Figure 12 is a wood-screw provided with a cutter and point in such a manner as to cut its way into the wood instead of pressing it to one side as is the case in the ordinary screw. None of these varities, however, have any very extended sale, and we are unable to say by whom they are manufactured or controlled. Figure 13 illustrates about the best of the patent forms. It is a diamond-pointed steel screw, manufactured by Russell & Erwin. Screws

FIG. 18. DIAMETERS OF WIRE.

(From American Screw Co.'s Catalogue.)



* American Screw Gauge. † Old Standard Birmingham Gauge.

[1] Continued from No. 660, page 74.

of this form can be driven with a hammer their entire length into any hard wood, and then held by one or two turns as securely as the ordinary screw. The head is made convex to strengthen it and prevent its splitting when struck with a hammer. The thread is of the ratchet form, which permits its penetration without tearing the wood fibres.

Ordinary gimlet-pointed screws are made in four styles, depending upon the use for which they are intended. The shank and point are always practically the same. The head is either

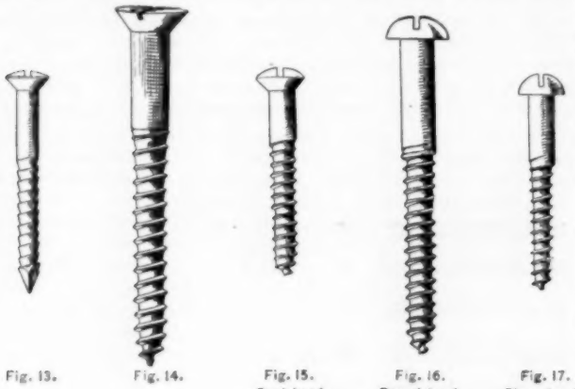


Fig. 13. Fig. 14. Fig. 15. Oval-head Screw. Fig. 16. Round-head Screw. Fig. 17. Piano-head Screw.

flat, Figure 14; oval, Figure 15; round, Figure 16; or of the form shown by Figure 17, which Russell & Erwin designate as having a "piano" head.

The kinds of screws which are manufactured for various purposes are almost infinite in variety, but so far as relates to

TABLE OF SCREWS.

Abridged from Catalogue of the American Screw Co. Price per gross.

Gauge.	0	2	4	6	8	10	12	14	16	18	20	22	24	30
¼	$.35 .52	$.35 .55	$.35 .60	....	....	....	....	....	....	....	....	....	....	....
⅜	.35 .52	.35 .56	.36 .62	$.37 .78	$.39	....	....	....	....	....	....	....	....	....
½	....	.35 .58	.36 .67	.39 .79	.40 .98	$.44 1.23	$.54	....	....	....	....	....	....	....
⅝	....	.35 .59	.36 .70	.39 .86	.42 1.09	.47 1.40	.56 1.75	$.66	....	....	....	....	....	....
¾	....	.35 .70	.39 .74	.40 .93	.44 1.22	.51 1.57	.59 1.97	.71 2.43	$.84 2.96	....	....	....	....	....
⅞	....	.38 .90	.40 .95	.43 1.01	.48 1.35	.55 1.73	.65 2.18	.77 2.69	.92 3.29	....	....	....	....	....
1	....	....	.42 1.04	.47 1.10	.53 1.48	.59 1.91	.72 2.40	.86 2.97	1.03 3.62	$1.21 4.35	$1.43	....	....	....
1¼	....	....	.51 1.38	.55 1.44	.59 1.73	.68 2.13	.83 2.83	.99 3.51	1.17 4.29	1.39 5.16	1.65	$2.00	$2.45	....
1½	....	....	.60 1.86	.64 1.92	.69 1.98	.78 2.58	.95 3.28	1.13 4.08	1.34 5.00	1.58 6.01	1.87 7.13	2.15	2.60	....
1¾	....	....	....	.73 2.45	.78 2.51	.88 2.91	1.05 3.72	1.27 4.64	1.52 5.68	1.82 6.84	2.09 8.13	2.30 9.53	2.77 11.07	....
2	....	....	....	.85 3.14	.89 3.20	.99 3.36	1.17 4.18	1.40 5.21	1.69 6.38	2.05 7.69	2.32 9.12	2.64 10.70	3.01 12.42	....
2¼	....	....	....	....	1.08 4.50	1.12 4 57	1.28 4.63	1.54 5.78	1.88 7.07	2.24 8.53	2.56 10.12	2.89 11.87	3.28	....
2½	....	....	....	....	1.22	1.28 6.23	1.43 6.29	1.71 6.35	2.07 7.78	2.45 9.38	2.81 11.13	3.15 13.04	3.55 15.12	....
2¾	....	....	....	....	....	1.63	1.69	1.89	2.27	2.66	3.07	3.42	3.87	....
3	....	....	....	....	....	1.97 9.00	2.02 9.05	2.09 9.11	2.46 9.17	2.87 11.05	3.32 13.12	3.76 15.37	4.22 17.82	....
3½	....	....	....	....	....	2.67	2.74	2.80	2.87	3.31	3.61	4.08	4.66	....
4	....	....	....	....	....	....	3.18	3.22	3.28	3.75	4.14	4.73	5.46	....
4½	....	....	....	....	....	....	....	....	4.15	4.18	4.80	5.54	6.38	....
5	....	....	....	....	....	....	....	....	....	5.57	5.63	6.46	7.30	....
6	....	....	....	....	....	....	....	....	....	....	8.80	8.85	8.92	$12.67

The upper figures give the price of iron screws: the lower that of brass screws. *Discount:* 60 to 75% on iron screws, 55 to 70% on brass screws.

builders' hardware in general, it will be sufficient to consider only the wood-screws, that is to say, the screws made for working with wood. The materials of which screws are made for this purpose are iron, steel, brass, copper, bronze and phosphor-bronze. The screws commonly in use are of iron. Steel screws are comparatively little used on account of the cost. Brass, copper, and bronze screws are used in connection with finishing hardware. Phosphor-bronze screws are used only in special cases.

Iron wood-screws are made in twenty different lengths, varying from one-quarter inch to six inches. Brass and nickel-plated screws are made only as high as three inches in length. Each length of screws has from six to eighteen varieties in thickness, there being in all thirty-one different gauges; so that altogether there are about 250 different sizes of ordinary wood-screws in the market. Figure 18 gives the different gauges in use from zero to thirty. Iron screws are finished with either a bronze, japanned, lacquered on tinned surface. P. & F. Corbin also manufacture copper, bronzed, and silver-plated screws. These and a few special varieties are kept in stock by most dealers. The preceding tables give the sizes, prices, etc., of iron, brass and nickel-plated screws, compiled from the catalogues of the American Screw Company, and P. & F. Corbin.

Nickel-plating increases the foregoing prices as follows:

Length.	Guage.	On Iron.	On Brass.
⅛	No. 4	$1.09	$0.98
1	" 6	1.03	1.10
2	" 9	1.49	1.72
3	" 14	2.91	4.34

Intermediate sizes approximately at the same ratio. *Discount:* 75 and 66 %.

Besides the ordinary wood-screws, the only other kinds used constructively to any extent by builders are lag-screws, and hand-rail screws. The former are more commonly known as coach-screws, and are manufactured in 128 different sizes varying from ¼″ x 1½″ to 1″ x 12″. In appearance the shank and the gimlet-point are the same as ordinary wood-screws, but the head is square, like a nut, and without any cross-cut, so that the screw can be turned up with a wrench. The following table gives the prices of a few of the sizes, as per the lists of the American Screw Co.

TABLE OF GIMLET-POINT COACH-SCREWS.

Price per hundred. *Discount:* 66⅔%.

Diameter in inches.	Length under the Head.					
	1½	2½	4	8	10	12
¼	$2.70	$3.10	$3.70	..	..	..
5/16	2.70	3.10	3.70	..	..	..
⅜	3.10	3.50	4.10	..	..	..
7/16	4.00	4.50	5.25	$7.25	..	..
½	4.30	4.90	5.80	8.20	$9.40	$10.60
9/16	..	6.90	8.10	11.30	12.90	14.50
⅝	..	6.90	8.10	11.30	12.90	14.50
¾	..	10.00	11.50	15.50	17.50	19.50
⅞	..	..	16.50	22.50	25.50	28.50
1	..	..	22.50	30.25	34.25	38.25

Hand-rail screws or joint-bolts are usually made in two ways, either with one end cut with a wood-screw thread, and the other provided with a machine-screw thread and loose nut, or with a machine-screw thread and nut on each end. One nut is generally cogged so it can be turned up easily by a pocket wrench. Joint-bolts are of two diameters, either 5/16 or ⅜-inch, and the standard lengths are from four to six inches, though some manufacturers produce joint-bolts as long as fifteen inches. Joint-

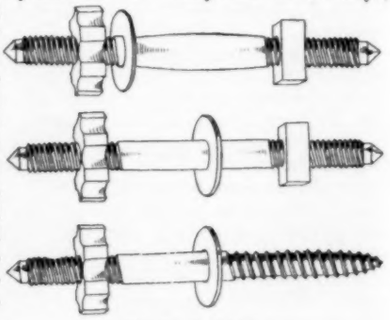


Fig. 19. Joint-bolts.

bolts with two nuts are sometimes made with $\frac{7}{16}$-inch diameter with a swelled centre. Figure 19 shows the various forms of joint-bolts, and the following table gives the prices per gross.

TABLE OF JOINT-BOLTS.

Discount: 75%.

Diam.	Length, 4 inches.			Length, 4½ inches.			Length, 5 inches.			Length, 5½ inches.			Length, 6 inches.		
	One nut.	Two nuts.	Swell'd centre.	One nut.	Two nuts.	Swell'd centre.	One nut.	Two nuts.	Swell'd centre.	One nut.	Two nuts.	Swell'd centre.	One nut.	Two nuts.	Swell'd centre.
$\frac{5}{16}$	$9.00	$10.25	..	$10.00	$11.25	..	$11.25	$12.50	..	$12.25	$13.50	..	..	..	..
$\frac{3}{8}$	..	..	..	11.25	13.50	..	12.50	14.50	..	13.50	15.75	..	$14.50	$16.75	..
$\frac{7}{16}$	..	..	$16.75	..	..	$18.00	..	..	$19.00	..	..	$20.25	..	..	$21.50

Screw-eyes are too well-known to require illustration. They are made of steel, iron or brass wire, with a gimlet-pointed thread cut on the shank. Iron screw-eyes are made plain, bright, bronzed or nickel-plated. The diameters of wire used vary from wire guage 0, to 14, the lengths of the eyes being from $\frac{1}{8}$ to $2\frac{1}{8}$ inches. The list price in iron of the largest sizes is $9.00 per gross. The smallest size cost 95 cents per gross. Brass screw-eyes cost about twice as much as iron. These prices are with a heavy discount.

Figure 20 shows the common forms of screw-hooks. The list prices for these are $6.00 per gross for No. 4 iron, and $22.00 per gross for No. 4 brass. About the same variety of sizes are listed for screw-hooks as for screw-eyes. The smaller sizes of hooks can be had in brass with washers or roses at a slight advance in price. The hooks are made as large as $4\frac{3}{4}$-inch, No. 0 wire.

Picture-knobs or hangers are intended to screw into the wall, through the plastering. They are made with a long screw

Fig. 20. Screw-hooks.

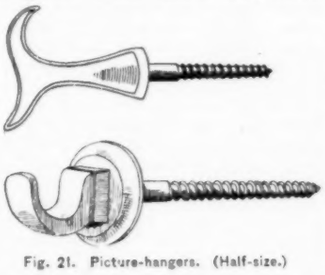


Fig. 21. Picture-hangers. (Half-size.)

shank provided with a knob of porcelain or metal, and are listed in four lengths, $\frac{3}{8}$-inch, $\frac{3}{4}$-inch, 1-inch and $1\frac{1}{4}$-inch; being sold at from $4.75 to $6.20 per gross, with a discount. Figure 21 illustrates one variety.

Picture-rod hooks are intended to support a rod on the wall, answering as a picture moulding. The list price (P. & F. Corbin) is from $2.00 to $4.50 per dozen, according to length and finish.

[To be continued.]

THE MORALS AND MANNERS OF ARCHITECTURE.

FOUNTAIN IN BASLE.
AFTER "ILLUSTRIRTE ZEITUNG"

METHODS of practice have changed in a marked degree within twenty years. The demand for the services of the architect is more general and there is a greater willingness to pay fairly for such services. Although all real-estate interests are somewhat depressed, probably by the annoying effects of strikes, or the apprehension of them, there is still a good deal of work to be done and the calling is not overstocked; that is, with capable and industrious regular practitioners. If the best tendencies could prevail architecture is likely to be considered, what its disciples have long claimed it to be, a "liberal profession." Can it be fairly said that the tendencies are in the right direction?

In early years our business suffered from the jealousy of the builders, and still more from a general indifference and lack of appreciation of the usefulness of its functions. But the places and perquisites of its practitioners were not attractive enough to provoke envy or encourage encroachment. With the growing American demand for soft-handed occupations it has become the object of sharp and hostile criticism and active interference from several quarters; and its position and prerogatives are assailed, not only by its old rivals "the practical man and the civil engineer," but by the man of business, the man of science, and a motley horde of sculptors, painters, decorators, furniture-makers and upholsterers; and often by a union of some or all of these.

Work formerly under one direction is now divided and subdivided. Personality is sacrificed to profit. The single practitioner is placed in competition with associations of artistic and constructive talent, business shrewdness, and social influence backed by ample capital. Added to all this architecture has become to some extent the fashion as a genteel employment suited to the supposed lack of well-defined demands and limitations and from a distinguishing title that may be assumed or discarded at will. These tendencies have been noted in English practice also, and, to judge by the discussion in English journals, with much apprehension.

Such signs of change raise important questions of artistic progress and business methods in the design of buildings and the direction of building operations. Are such changes part and parcel of modern tendencies, and if so, what is to be their final effect on building? Or, are they defects of professional practice, the result of greed and a lack of honest devotion to true art, independent of outside influences and to be corrected by ourselves? The records of some of the most dishonorable ventures unfortunately bear some of our foremost names, and bad methods are often ignored or condoned if offset by temporary good fortune. In other professions the "free lances" are found on the flanks or rear. In architecture they as often head the column; and men whose talents would assure them legitimate success are among the first to encourage irregularities. One remedy for these and kindred evils that is most vigorously advocated, and as vigorously opposed, in England is the compulsory examination and registration, to be enforced by an Act of Parliament; and under which no man can style himself "architect" until he has passed an examination and received a diploma. No attempt is made to prevent others, not architects, from conducting building operations; and it is admitted that against negligence or fraud no diploma can defend a client.

Laws against bad buildings should be strictly drawn and intelligently, rigidly and impartially enforced. Every one concerned in building should be held accountable for his proper share of avoidable defects. Architectural societies should insist on the doctrine that there can be no good architecture without good building. Laws cannot make architects or ennoble the profession. Hard work added to natural qualifications are the only means to such an end.

If the tendency of practice is towards large associations and combinations what is to be the effect on students and draughtsmen? Will they be confined within narrow lines of routine work and forfeit all chance of breadth of culture, and hope of independent practice except as parts of a machine? What is to be substituted for the supposed confidential and intimate relations of architect and client? Will combinations, in order to meet large current expenditures be led, in dull times or habitually, to lower the rates of compensation, or make wholesale rates for quantity, as it were. And, lastly, can a school or combination do the art work, or even the constructive work, of a "master," or are we ready to admit that the day of masters is gone by, and that art and science are to be henceforth the slaves of trade and adopt the methods of the "Trust" and the "drummer"?

There is much reason to fear that architecture is following to some extent the tendencies of the times — and some of the worst tendencies. The country is suffering under an infliction of babblers and drones. Every one wants to talk and scribble and sketch, and few to study and work and draw. Facility in meretricious effects is the method of the many, and their coveted end money and notoriety. The worst work of the times finds publicity through the reporters' vulgar style displayed in slovenly print on rotten "chemical paper." It is fortunate that so much trash is recorded on so perishable a medium. The private library has given place to costly furnishings and bric-à-brac. Luxury usurps the place of learning. There is still reading, but mostly for amusement and excitement. As Lowell says, "We wonder at the scholarship of the men of three centuries ago, but they were scholars because they did not read so many things as we do. Their speech was the best, because they lunched with Plutarch and supped with Plato. We spend no less time than they did, but instead of communing with choice spirits, we diligently inform ourselves of the most commonplace trivialities. We are getting buried alive under this avalanche of earthly impertinences — becoming mere sponges saturated from the stagnant goose-pond of village gossip."

The architects, and also the masons and carpenters of the past, with access to a few noble buildings, or some simple volumes, by loving and thorough study achieved works that even in their decay evoke our heartiest admiration. Their advances were by slow and well-considered steps.

The greatest works of our own and elder days are commonly marked by great restraint. Many of our large structures would be improved by stripping them of much of their ornamentation, which often detracts from the massive grandeur of high-piled brick and

stone. It would be easy to point out pretentious buildings of which the rear blank wall is more impressive than the ornate façade where "vaulting ambition has o'erleaped itself."

Among craftsmen the unscrupulous loafer, if favored with an oily tongue, can often lead to slavery the skilled labor of the nation. In like manner the youth who can cleverly render a ruin, and has command of a smattering of artistic slang, dubs himself "Architect," rifles the Arab's tent and the Indian wigwam for novelties and dodges, with which to stimulate a debilitated public taste that has been encouraged to demand the new rather than the beautiful, and is permitted to squander peoples' money and abuse honest bricks and mortar. Art, like society, is afflicted with a plague of restlessness.

Many who recognize these evil tendencies are afraid to take a bold stand against such abuses for fear of misconstruction or misrepresentation. One is fearful of being thought lacking in this or that accomplishment which may be temporarily in favor. There is not enough patience and faith in the trial of time. Success must be achieved by leaps and not by climbing. An architect of ability reintroduces an old style of which he has acquired control by long study. Aided by an attractive personality and great persuasive powers he makes it a pecuniary and artistic success. He is at once copied, not only by weak disciples in a weakly manner, but by men of sufficient brains to lead in a path of their own choosing. Cathedrals, castles and convents are pressed into service in bulk or jumbled together with little regard for age, climate or previous condition.

With such mixed and false application of design is united an equally false presentation of it. For an intelligent showing of a building there is offered the sketch of the impressionist, or rather of the visionary. The true purpose of architectural drawing — to enable workmen to carry out a design and to realize in lasting materials the conception of the architect — is entirely lost sight of.

There were few if any architectural sketches, as we understand the term, in the days of the work we profess to admire the most. In real constructive art, every drawing is a working-drawing; there is no such thing as "exhibition" or "show" drawing. The power to design has no necessary connection with the power to draw. Many excellent pictorial draughtsmen are utterly weak in invention, combination and taste, and never produce a building worthy of respect, unless they copy it outright. The power to draw with accuracy and facility is of great use to record and interpret ideas and facilitate their expression. Without ideas the power is a delusion and a snare both to draughtsman and employer.

An architect should be a true artist, that is, he should create by necessarily slow and deliberate methods useful and beautiful structures. But structures they must be and not the chaotic product of ill-digested and half-comprehended sketches. An architect should not be an artist in the common sense. He has no rivalry with the easel painter and there is no ground of comparison between them. The work of the latter ends where his begins. The only use of pictorial art to the architect is a questionable commercial one — the enticement and delusion of clients. It has no more real connection with proper architectural design than the cheap politician's trickery has to do with statesmanship.

Architectural drawings, when true to their purpose, are utterly uninteresting to the general public. When treated in a manner to excite popular attention they cease to be of technical value. A gallery of simple views of good buildings would be deserted for a collection of third-rate paintings or even first-rate chromos — if not labelled as such. And yet buildings erected from these very drawings might elicit enthusiastic praise. The public are right in this. They recognize the unreality of the paper and pen-and-ink building. They always suspect some trick in it. And yet this sham is kept up by ourselves at the expense of the permanent success and dignity of a noble calling. It has become the fashion of late to rule out photographs from the galleries of architectural exhibits. Properly, they should be the only representations of buildings allowed. What matter whether the medium of the designer's control be a bit of board and a pencil or a floor and a piece of chalk so that it produces a worthy structure?

The art of the architect is far above and beyond that of the mere easel painter. The desire to be known as a draughtsman, principally, is a pretty sure sign of weakness in more important attainments. The great general has little ambition to play in a brass band. It is one of the most singular and discouraging features of modern practice that so much stress should be laid on the mere power to render drawings; that men in the practice of a combined art and science that for successful results requires the highest natural qualifications developed by the most unremitting labor and study should be willing to waste much of a short life on draughtsmen's tricks or even on finished pictures. It certainly shows a false tendency, but some of its causes are sufficiently evident.

The building art of to-day has to deal with many new conditions, among which are the various forms and varieties of competitions, the business interests of the architectural journals, the exhibitions of architectural drawings, the pictorial advertising, which is a part of all these, and the division of labor in architectural combinations. The evils of competitions have been repeatedly rehearsed and are inseparable from their practice. In spite of the volumes written on the subject and the experiments tried and regulations recommended during the last fifty years, they remain to-day as fruitful of bad feeling, bad morals and bad building as at their first institution. They have no parallel in any like calling, and architecture can never be a true profession while they continue. A client wishes a building-design. He is given a choice of pictures and is told, what is known to be false, that he is competent to obtain what he desires in such a manner. The country deacon is patted on the back and encouraged to think that he can discriminate between water-color washes and pen-and-ink hatching, or to choose between a "cooked" perspective and a geometrical elevation. He is persuaded to believe that he can see through or smell through a system of ventilation by noting a few flue sections and arrow-marks on plans, and determine acoustic qualities by dimensions in feet and inches. His ears are filled with eloquent gush about the interest of the problem in hand and the desire of the architect to treat it regardless of remuneration. He is encouraged in the prevalent notion that an architect is a composite creature, art enthusiast, speculator and magician, whose brain teems with graceful designs from which it must be promptly relieved or fail from a sort of art apoplexy; who lives chiefly on fame and whose only ambition in life is the pleasure of serving clients at any personal sacrifice. This phenomenal devotion to one's art in these practical days is perhaps characteristic of no other profession. Even the country deacon finds it phenomenal and is apt to doubt its entire sincerity.

Professional journals, when started by associations of architects, have been but short lived. Even when they have begun as semi-organs of the societies the connection has never been permanent. No periodical of the kind has been, or perhaps can be at present, devoted to the true interests of architectural art or advocate boldly the highest standards of practice. Subscribers and advertisers must be had in large numbers and from all classes, and illustrations must be attractive pictures rendered with an express view to processes of reproduction and furnished for publication, so far as possible, free of cost. There is a constant rivalry in extent of circulation. Buildings of the meanest description and utterly devoid of interest must be rendered and presented in as attractive form as may be to avoid offence and to please the many. Influential practitioners and capitalists must be catered to. Popular notions must be coddled. In short, the money interest must be kept steadily in view and no position must be taken likely to seriously imperil it. In spite of these conditions, the standard of the architectural press is far above that of its daily contemporaries, and where the latter cater to some of the worst elements, the former is doing much good educational work, especially in the reproduction of buildings, old and new, from photographs, as they actually exist. Still, the business interest must be paramount, and the subscription-list represents all classes, the best and the worst. Publishers cannot be expected to evince much chivalric interest in the higher aims of the profession. That which will command a ready sale must be offered in a salable form. Competitions and exhibitions must be encouraged that the showy results may fill their pages and attract patronage. Aided by a class of practitioners whose personal peculiarities or training and the organization of whose offices favor the methods of the successful competitive adventurer, they endeavor, with considerable success, to impress upon the public mind that such tournaments are necessary and permanent features of regular practice.

That which people have constantly forced upon them by persistent and confident reiteration they begin to think must have some basis of truth, and a considerable minority are dragooned, in spite of their honest convictions to the contrary, to take part in the scramble or to see themselves deprived of a share of certain desirable classes of work that would otherwise fall to them in the ordinary course of business.

Though individuals may profit for a time by the misuse of their professional position, in the long run the degradation of their chosen calling will not prove profitable to any. If the majority of competent architects maintained a uniform dignity and consistency in practice there would soon be little cause to complain of clients, and even legislative bodies might be induced to treat them with as much consideration as they would show to a builder perhaps. Where do people get the notion that the architect's service may be gratuitous or given on a chance of pay, if not from architects themselves? Where do they learn that stationary and draughtsmen's work is the basis of compensation and not the native ability and cultivated and matured powers of which these are but the tools and implements?

One of our leading journals advised us not long ago that "many of the better class of architects have for years refused to take part in any competition whatever." "Whether this is the wisest course for them we will not undertake to say, but a new class of architects is now growing up in this country, composed of men who long for the fray of friendly rivalry, who feel that they learn more even by defeat than by victory, and hold the mere selfish advantage of winning very lightly in comparison with the invigorating and stimulating exercise in their noble art which the contest itself affords to all who take part in it honorably."

Would it be possible to parallel such a statement as this in a technical journal of any other profession? Is there a "Dodson & Fog" class coming up among the lawyers who want no fees unless they "can get them out of the defendant," or, to be more accurate, who only "long for the fray of friendly rivalry." If this be progress what sort of practice will the next set of juniors initiate? Again, a reviewer of the published life of a distinguished contemporary says of his course in an important competition, "It was, of course, an immoral thing to do and the rebuff was deserved, but one cannot help regretting that the attempt was not successful." This can

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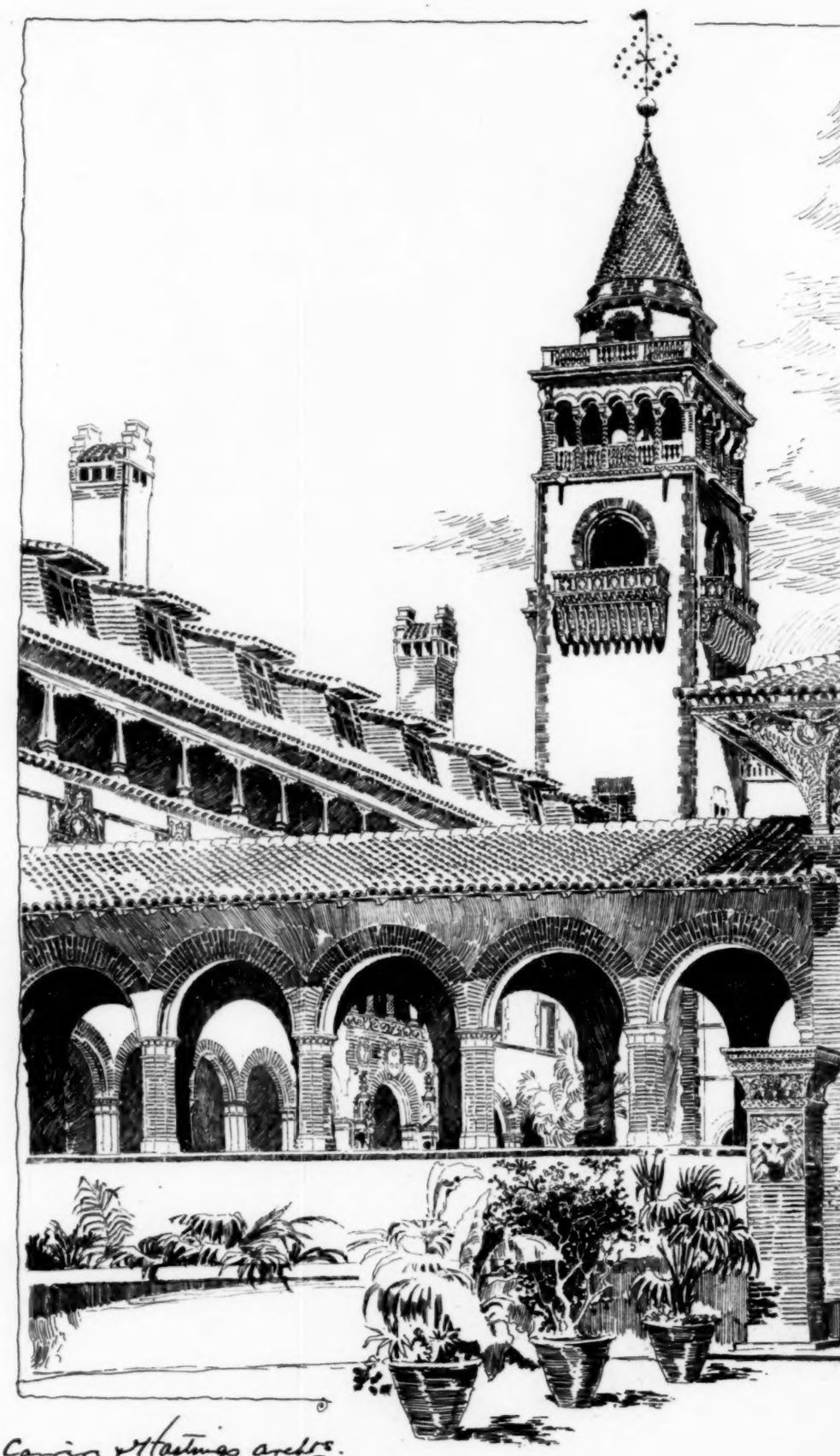

Carrère & Hastings archts.
Bowling Green New York.

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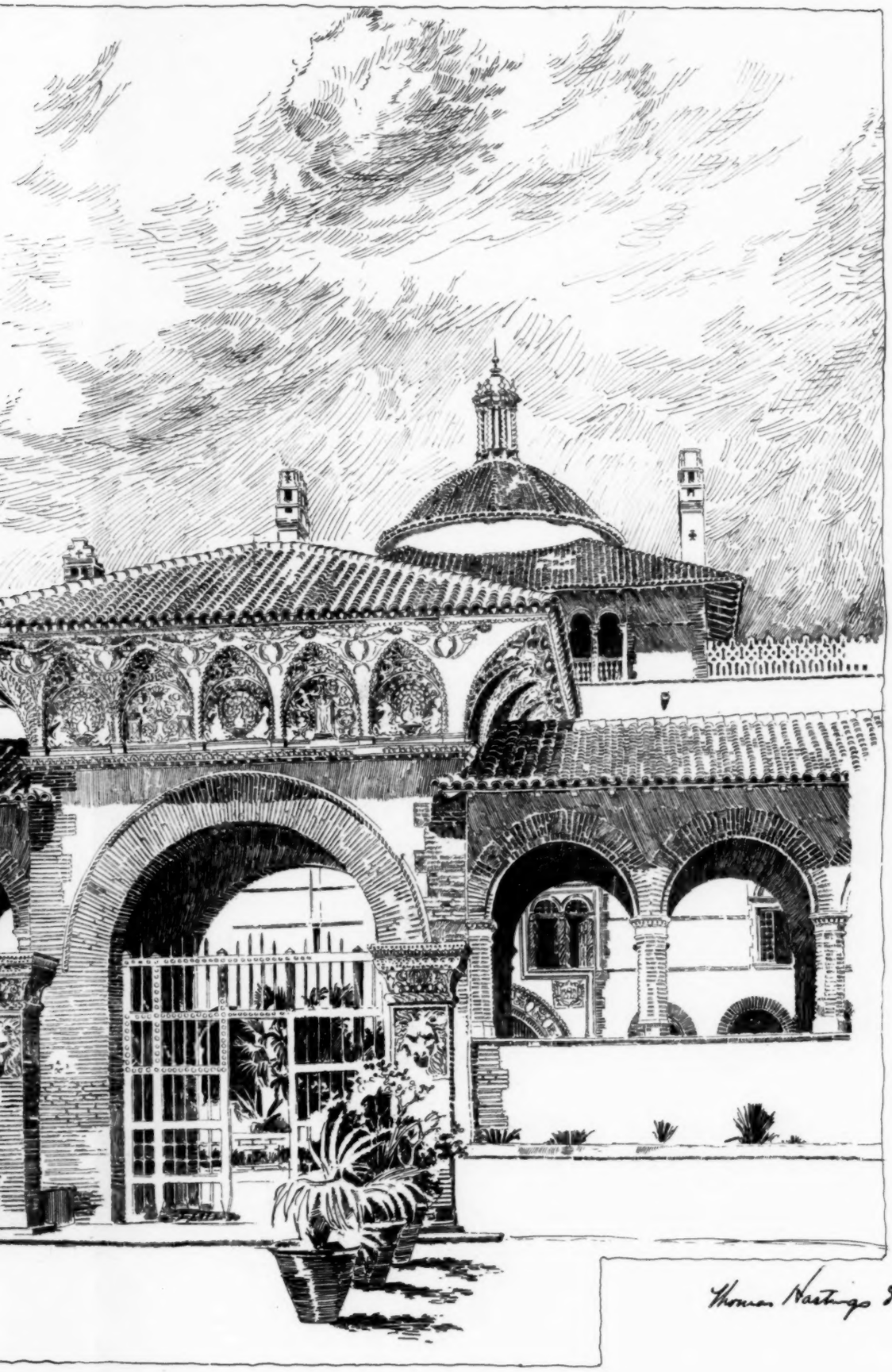

Thomas Hastings del.

f the Hotel Ponce de Leon, St. Augustine, Fla.

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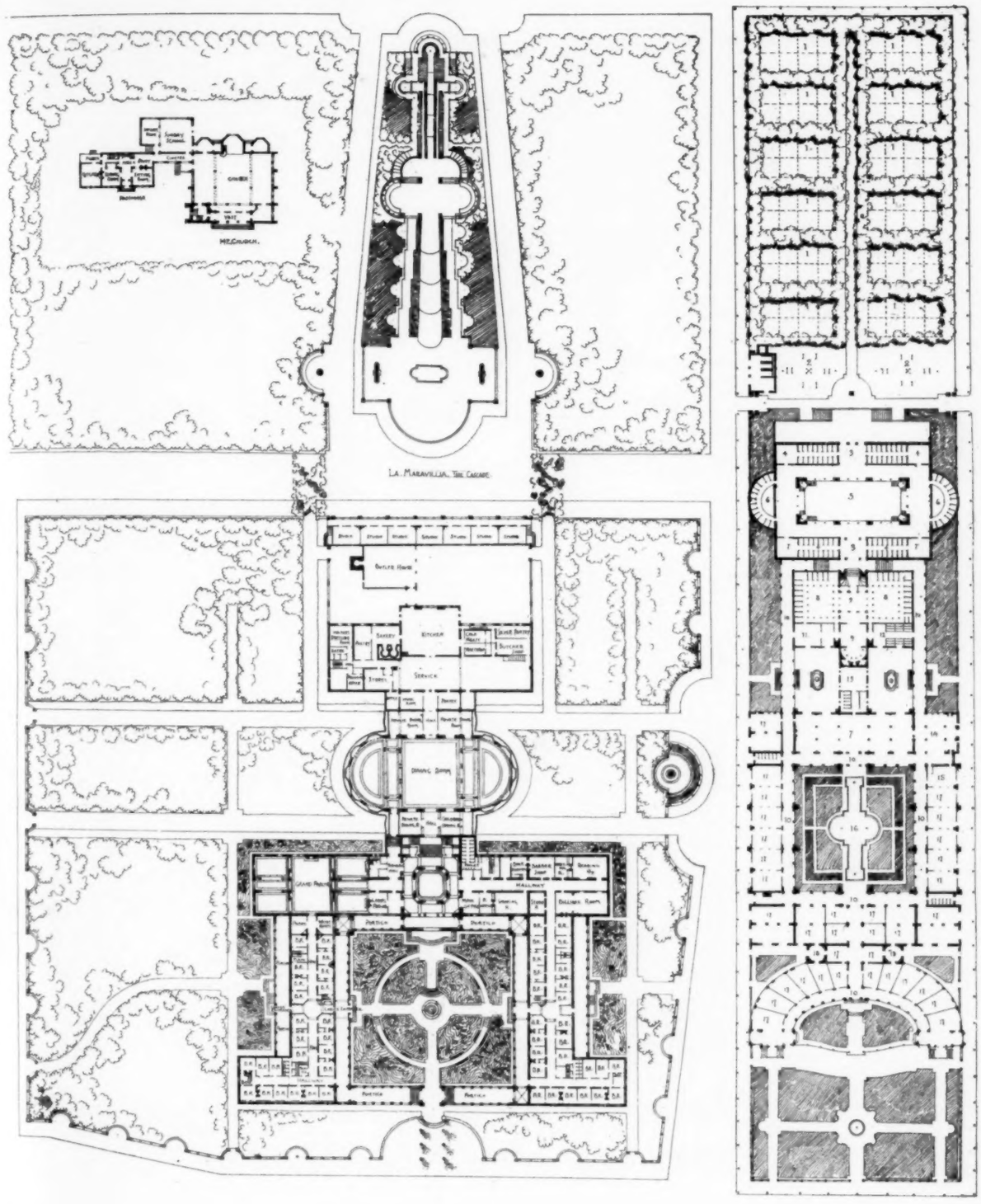


ALCAZAR:

1 TENNIS COURT.
2 CROQUET COURT.
3 VESTIBULE.
4 DRESSING ROOM.
5 SALT WATER SWIMMING BATH.
6 SHOWER BATH.
7 LINEN ROOM.
8 LOUNGING ROOM.
9 TURKISH BATH.
10 ARCADE.
11 MASSAGE ROOM.
12 RUSSIAN BATH.
13 SWIMMING BATH.
14 OFFICE HALL.
15 BAGGAGE ROOM.
16 FOUNTAIN.
17 STORE.
18 TOWER.

PLANS: OF: HOTEL: PONCE: DE: LEON: CASCADE: AND: M.E. CHURCH:
CARRERE AND HASTINGS, ARCHTS N.Y. AT ST. AUGUSTINE, FLORIDA.

Heliotype Printing Co. Boston.

hardly be styled what is known in modern slang as "Sunday School politics," but it is altogether too common a way of treating architectural morals.

In treating of the effect of professional combinations it is not intended to include the simple partnerships of architect with architect. These may be entirely legitimate, and may produce as good work as individuals. To such as shrink from meeting heavy responsibilities single-handed, and have no great care for personal achievement they offer certain inducements. But pronounced individuality of temperament would lead others to prefer the slight and brief distinction that might come to them as John Smith rather than a share of the reflected glory of Messrs M. Angelo, John Smith & Co. There is no doubt that under given conditions good work can be done by combinations of architects. In some respects much service may be of positive business advantage. But the experience of the world inclines one to believe that the greatest results must come from the single master hand. Or at any rate, that the helpers must be entirely subordinate to the master.

But these legitimate unions in no way injure the welfare of the profession. Their fame and their profits are divided by the number of partners; and where one client prefers the advantages of multiplied talent and a large establishment, another elects to deal with the one controlling head of all the departments of his building.

But a second form of combination has been fostered by the course of some architects. These have persistently cultivated the belief that the great building artist was above practical matters and the small details of construction and supervision. That his art was monumental and above the trivialities of convenience and healthfulness, these he must either neglect or employ various experts and agents to devise and direct, leaving him to conceive great designs to be reduced to everyday usefulness by humbler assistants. Or to select from another class: a man that has no qualifications assumes the name of architect, and employs designers as well as other experts to execute the work that he secures, and claims all credit for. The men of the world, looking at these positions from a practical standpoint, conclude that if an architect can be produced by combination they can patch up one for themselves. Hence the grouping of the man of business, or builder perhaps; a decorator; upholsterer or cabinet-maker; and one or more pictorial artists for the show business. An engineer may be the head of the group or one of its members. Generally the lion's share of the profits of this architectural "trust" is taken by the manager or broker of others' talents. One can easily see that with a large class of clients, and especially with committees striving to get twenty men's work for the payment of one fee through the medium of competition, the superficial advantages that can be put in evidence must far exceed the efforts of the struggling young practitioner with but his own head and hands and slender purse to rely on; to be sure he can "learn by defeat," and his education will be ample if not profitable.

It is admitted that these peculiarities of modern practice are endangering the standing of the profession with its employers, and the question naturally arises: "What are you going to do about it?"

A review of the work of the American Institute of Architects and its Chapters and kindred societies shows that membership has increased, that many meetings have been held, and that on the whole they have gained somewhat in interest. A large sum of money has been expended in the publication of reports of proceedings and other papers, and some useful information has been disseminated. The local societies have in some cases done more thorough and useful work, especially in an educational direction, than the national one. But when one looks for important results, as embodied in professional custom and practice, not much is found. Something of improvement has been secured in building-laws. A schedule of "usual and proper charges" has been issued and amended. Its recommendations have been followed by the members when found agreeable and in furtherance of selfish interests, but too often disregarded. An able committee prepared and printed "a tract on competition," in which the reasons against the practice outnumber and outweigh those in its favor; and yet the report closes with suggestions for regulation and not for abolition. And the effect of these suggestions, although backed by influential names, led to no practical improvement and has not even bound the members of the society that endorsed them.

An elaborate form of contract has been printed, but so wordy and so obviously oppressive to the contractor that it has never come into general use.

Open fraud has been usually condemned, but there has been little loss of caste by those known to habitually indulge in practices oversharp or unwarrantably selfish. Those favored by temporary good fortune or natural attainments have paid little heed to the rights of weaker brethren. Professional union has been a rope of sand. There has seldom been a case in court in which conflicting testimony on usage and custom has not been given by men supposed to travel by the same road.

The fact that so little has been accomplished by the societies should not discourage associations. If the old organizations are defective let new ones be started, and started with the determination to treat the vital questions of practice, and to neither ignore nor evade them. Six good brave men in each of our large cities could do more to establish the profession on a firm basis than any number of lukewarm societies of the present order. Let a minimum rate of compensation be established and recommended. Let it be agreed that all men with exceptional advantages shall increase their rates, and shall continue to give all work their full personal attention. Thus neither employer nor employed would be the loser. Make it clearly understood that an architect is to be judged by his buildings only. As Professor Kerr says of an architect: "If his buildings will not stand — nay if they are not manifestly stable — they fail in the first requisite of art; and it is the fact that the building is a structure, and not a mere design, which raises architecture so immeasurably above scene-painting."

We cannot eradicate selfishness by ordinance or the edicts of societies. But if architecture in the future is to be an art or even a profession, the time is ripe for all who hold such convictions to unite in an earnest effort to demonstrate its right to such distinction.

JOHN A. FOX.

THE ILLUSTRATIONS

[*Contributors are requested to send with their drawings full and adequate descriptions of the buildings, including a statement of cost.*]

ENTRANCE TO THE COURT-YARD OF THE HOTEL PONCE DE LEON, ST. AUGUSTINE, FLA. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

[Gelatine Print issued only with Gelatine and Imperial editions.]

PLANS OF THE HOTEL PONCE DE LEON, THE ALCAZAR AND THE METHODIST EPISCOPAL CHURCH, ST. AUGUSTINE, FLA. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

THE Ponce de Leon is built in the style of the early Spanish Renaissance, which was strongly influenced by the Moorish spirit. The coloring is as rich and varied as the outline. The main material used for the building — towers and all — is a shell-composite of a light mother-of-pearl color, that glitters in the sun and turns to dark blue the shadows cast upon it by the deep reveals. In contrast with the main coloring is the bright salmon of the terra-cotta, which is the material of the ornamentation. This is very rich on the towers and in the court — indeed the balconies high up on the towers are of solid terra-cotta and weigh five tons apiece — but the outer walls of the building are simpler, following a rule of this style of architecture, and the lively salmon coloring appears only in the quoins, in the arches of the windows and verandas, and in the corner towers. While we are speaking of color we must not forget the dark Spanish roof-tiles or the rich faience over the main entrance. Before entering the court we must notice that the building is a monolith. A mile away, on Anastasia Island, there are quantities of tiny broken shells that you can run like sand through your fingers. Thousands of carloads of this shell-deposit or coquina were brought over and then mixed with cement, six parts of shell to one of cement, the whole forming an indestructible composite. It is not exact to say that the hotel was *built;* it was *cast.* For there is not a joint in the building; the material was made on the spot, poured in while still soft and rammed down three inches at a time.

But we must now pass under the portico and enter the court, which by the way is 150 feet square. The half of the court towards the entrance being lower than the other, you ascend by various short flights of steps. Around the court runs a corridor. Opposite the outside entrance is the great, low archway through which you enter the hotel. "Ponce de Leon" is the legend that runs around the arch — carved on shields, a letter to a shield. Above this arch is a brilliant mosaic. There are also two entrances for ladies, one in the centre of either wing. On either side of each entrance in a niche in the wall there is a fountain. The water issues from the mouth of a dolphin, carved in high relief. Indeed, the ornamentation of the whole court — and there is plenty of it and all imbued with the rich Renaissance spirit — suggests the marine character of the main material of the building. Mermaids sport among the shields of the great arch, and shells appear everywhere. Notice also the scrolls here and there, carved with quaint Spanish proverbs. But the unique feature of the court is the great grille, or cage, rising from the top of each side entrance to the corridor of the third story. These two cages are filled with climbing plants and gorgeous flowers, among which flash birds of brilliant plumage.

A broad flight of steps ascends from the court to the platform before the main entrance. The vestibule is rich in marbles. We now enter the huge space occupied by the rotunda and the corridor around it. The floor is an elaborate mosaic made of tiny bits of marble in the Renaissance manner. There are two very large marble fireplaces, contrasting with the elaborately carved oak wainscoting. In two corners there are fountains.

It is the rotunda itself that claims the attention. It is supported by four great piers and eight oak pillars, on each of which are carved four caryatides of life-size. The rotunda is four stories high, and around each story runs a corridor with different arches and columns. The great dome is decorated with figures carved in high relief and above these with paintings after original designs, allegorical representations of the history of Spain and Florida. The

general effect of color is very rich. You look straight up through an open space in the form of a star, formed by penetrations in the dome, to the copper columns of the lantern.

We must now get a glimpse of the grand parlor — a room 104 feet by 53, but divided practically into five rooms by arches, *portières* and screens. A noticeable feature is an immense mantel-piece rising to the ceiling.

A flight of marble steps ascends from the rotunda to a mosaic platform from which you pass through a short hall into a room as large as many an opera-house. This is the great dining-room. The central part is divided from its two rounded ends by rich oak pillars supporting a dome around which runs a clerestory. The room is lighted by numerous bay-windows of stained-glass, illustrating allegorical subjects. The coloring of the decorations in general carries out the Renaissance spirit that appears everywhere else in the building. The dining-room, like all the rest of the hotel, is lighted by electricity. If dining is ever a fine art, it surely can be made so here, if one is fortunate enough to get a table near a window that overlooks the orange groves, sweet with flowers, brilliant with leaves and fruit, and vocal with the hum of innumerable bees.

As to the part of the hotel devoted to the service, it is quite separated from the rest of the building by the dining-room. When we say that the pantry is over a hundred feet long, we can leave the bakery, the kitchen and the oven to the reader's imagination.

The dining-room can be approached from the gardens. We have already noticed the steps leading from the rotunda to the platform at the entrance of the dining-room. Underneath this platform and extending from garden to garden is an arched passage, twelve feet high, and richly decorated in terra-cotta. Carriages can drive through this passage, which is really a great porte-cochère. From it, steps ascend six feet to the rotunda, from which you ascend six feet more to the dining-room entrance. There is another such tunnel behind the dining-room.

Perhaps the most prominent feature in the grounds is the Cascade. When the workmen were boring for water to be used for the domestic purposes of the hotel, they came upon a sulphur spring of such force and volume that it was decided to use the water for driving the machinery. This spring emits ten million gallons of water in twenty-four hours. The Cascade is 450 feet long and is built up in the manner of the great Cascade of St. Cloud — ornamented with fountains, statues, stairs, etc., and lighted by electricity.

But there is another garden to see, and this is a unique garden sixty feet above the court! Between the two towers and looking down into the court on the one side, while it opens toward the interior of the dome on the other, is a broad, paved terrace covered with an arbor of vines and plants. To this elevators ascend from the ground-floor. This terrace is extended to the two sides of the building, forming thus a splendid promenade. The view takes in the sea, the town, the gardens, and the Florida wilderness that creeps up to the very door of St. Augustine. The width is forty feet, and offers a temptation to a dance under the vines and flowers of this similitude of the hanging gardens of Babylon. The great towers can also be ascended and from these a yet more extensive view may be obtained.

We have now seen the public rooms of the Ponce de Leon, and a word should be said about the rooms for guests. These are all spacious; some of them open on the court garden, some on the loggias of the court or on the balconies, while all are airy and command charming views. The difficult problem of combining the best plumbing and heating apparatus with the best architectual appearance has been grappled with and successfully solved. Indeed through the whole building comfort and beauty go hand in hand, and neither is ever sacrificed to the other.

The Alcazar serves the purpose of providing amusement and occupation to the visitors of the Ponce de Leon, while it furnishes, at the same time, a dependence for those who cannot find rooms in the main hotel. Though very different in detail from the Ponce de Leon, it follows the same general architecture. The great façade presents a pleasing variety of towers, pavilions, minarets, arcades and roofs of old Spanish tiles. First there is a crescent arcade of shops, opening on the Alameda, or broad *plaza* that separates the Alcazar from the Ponce de Leon. Then you pass through to a square court, a sort of Palais Royal with numerous bazaars, gay with all sorts of wares; a good place to spend a rainy morning, as a covered arcade extends around the court in front of the shops. This court is also a tropical garden. The Alcazar has a great sulphur swimming-bath, a salt-water bath, tennis-grounds, club-rooms and all sorts of aids to merry-making. Besides all this it has 300 bedrooms and a large general restaurant. Connected with the Alcazar there is also one of the finest Turkish and Russian bath-houses in the world.

ENTRANCE TO HOTEL PONCE DE LEON, ST. AUGUSTINE, FLA., WITH "PORTCULLIS," LEADING FROM KING ST. TO COURT. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

TOWER, DOME AND TERRACE OF HOTEL PONCE DE LEON, ST. AUGUSTINE, FLA., TAKEN FROM EAST TOWER. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

ALCAZAR HOTEL, ST. AUGUSTINE, FLA. H. M. TAYLOR, ESQ., OWNER. MESSRS. CARRERE & HASTINGS, ARCHITECTS, NEW YORK, N. Y.

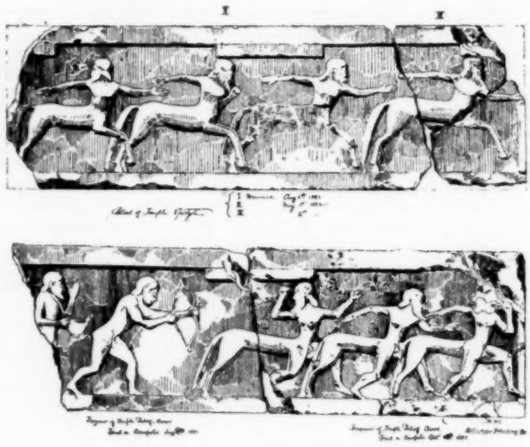
EQUESTRIAN MONUMENTS. — IV.[1]

WHETHER or no a centaur may be considered an equestrian figure, he is too graceful a creation of mythological art and literature to be neglected and innumerable examples of the popularity of this theme have come down to us, most of them as more or less fragmentary bits of sculptured friezes which depict the battles of the centaurs and the Lapithæ, their destruction by Hercules, their contests with the Amazons, or their abduction of both named and nameless females. In these scenes it seems as if the sympathy of the observer must go with the hybrid. He seems pathetically handicapped, as if he were always conscious that he is vainly struggling with a too powerful fate. Yet get him alone by himself, he seems a most happy individual, a faunishly insouciant creature, always able

Pegasus and Centaur. — From a Vase.[2]

Engraved Seal showing Medusa, Pegasus and Centaur in one.[2]

to travel without fatigue, untroubled by clothing, having fear of neither bit nor harness, not having to endure the neglect and cruelty of grooms, and withal able to read, to pipe, to talk, to eat delicacies, to enjoy life, in short, as few created creatures can. It is no wonder that he was a favorite subject with sculptors who knew how to blend the divine grace of the human form with the almost equally subtile charms of the perfect horse. The two centaurs in the Museum at Naples are, in their way, the most enjoyable of statues and amongst



Reliefs from the Temple at Assos. Sketched by F. H. Bacon.

the most famous, yielding in this respect to the black marble ones in the Capitol at Rome only because more people go to Rome than to Naples. The centaurs of the Capitol are said to have been executed in the time of Hadrian; at any rate they were removed from Hadrian's Villa to the Capitol in 1736. They were sculptured by Aristeas and Papias Carian, sculptors. The centaurs of the Capitol incompletely reproduce the allegory of the joyousness with which youth endures the assaults of love and the anguish and torment that its transports bring to riper age — incompletely, since these centaurs do not bear the winged and tormenting cupids on their backs which are found on the centaurs of the Louvre and elsewhere, and were

[1] Continued from No. 660, page 76.
[2] From Müller's "*Denkmaler der Alten Kunst.*"

possibly found on the original pair after which the Rome and Paris statues were probably copied. Lübke seems to think that the Capitol centaurs themselves originally had cupids on their backs.

As the centaur was altogether a mythical being, and more a creature of the imagination even than the gods and goddesses whom ancient sculptors so often selected as their subjects, and for whom they could conceive no more fitting presentment than to fashion them in the semblance of perfect human beauty, greater liberty was taken with them in deciding on the manner in which man and horse should be combined; but we are most familiar with the type which shows the upper-half of a human body set upon the shoulders of a horse. The fact that the Greeks used different words "centaur," "hippocentaur" and "onocentaur," which are now translated as meaning the same creature, may really indicate that the centaur was more man than horse, while what are usually called centaurs, in which the horse predominates over the man, should strictly be called hippo-centaurs. Those interested in such matters have known that these different forms were represented in ancient art; but it was difficult to determine when the earlier form, if it be an earlier form, became obsolete, or whether there were really two forms of centaurs existing contemporaneously in the art of different epochs. Until the recent excavations at Assos this dividing line was obscure, but there was discovered there a temple bas-relief which showed centaurs of a very archaic model, dating probably from the sixth or seventh century before Christ, which had the striking peculiarity that the fore-legs of the hybrid were human and only the hind-legs equine. A still more singular fact is that upon another part of the same frieze are centaurs fashioned in the usual way. Are the first, then, centaurs and the second hippocentaurs?

From a Vase.[1]

The Centaurs of the Capitol. Aristeas and Papias, Sculptors.

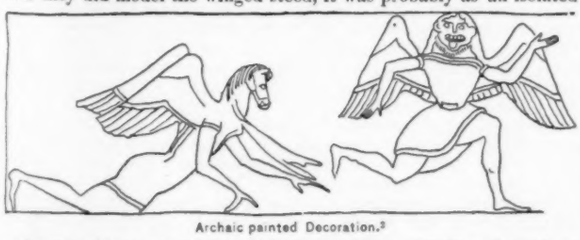
Another type, supposed to be of Phœnician origin, was brought to light in 1880 at the Villa Benvenuti, near Este in Italy, where embossed on a bronze situla, or water-jar, was discovered a centaur which differed from the common kind in that he was furnished with wings, and thus seems to form a connecting link between the winged bulls of Assyria on the one hand and the classic Pegasus on the other.

So far as it is possible to determine the ancients rarely attempted to model in the round Pegasus, the special servant of the Muses, although he was a favorite subject with painters and poets. Whenever they did model the winged steed, it was probably as an isolated and unbestridden animal, for, with the exception of Bellerophon, there would be no man who could with appropriateness be placed on his back, and the difficulty of reconciling a rider's legs with wings growing from his horse's withers probably prevented any attempt to represent some favorite poet of the hour on the steed of the divine nine. It was left to French artists of a later day, Coysevox and Mercié, to attempt the difficult task of portraying the one Fame, the other the Genius of the Arts, in the uncomfortable act of avoiding a hasty dismounting through the flourish of the sweeping wings. But on gems, medals and bas-reliefs Pegasus has been a favorite subject with sculptors and painters, both ancient and modern. One of the most vigorous, lifelike and artistic presentations is shown upon the reverse of a medal of the Bembi, by Benvenuto Cellini. The only record of a statue of Pegasus it has been possible to discover is one that merely mentions the existence of a statue of Pegasus and Bellerophon at Byzantium.

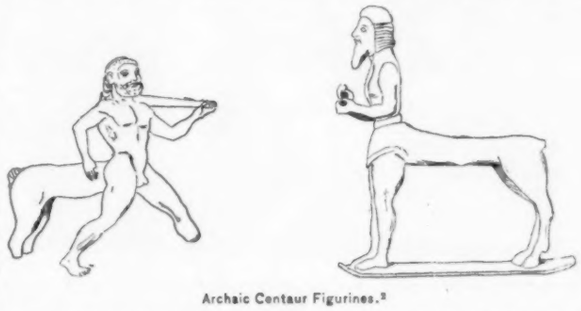
The Genius of the Arts, over the Guichet of the Louvre. Mercie, Sculptor.[1]

In the funeral procession of a monarch it is even in these days not unusual to lead his favorite charger, whose empty saddle adds more of pathos to the scene than does the elaborately bedecked funeral car; and it is with some Indian tribes the custom that beside the grave of the dead chief should be slaughtered the faithful beast who had shared so many of his master's dangers. In the first case we feel that the unburdened charger is one of the most impressive features of the surrounding funeral pomp, and in the other we understand that Indian superstition seeks to provide the departed chief with a speedy way of reaching the Happy Hunting-ground. The connection of this Indian custom with the manners of the ancient pagans is singularly close, and it is not unlikely that in the customs of all races who have enjoyed the service of the horse could be traced a more or less close symbolic connection between the flitting of a departing soul and the horse.

The rude cut that represents an antique bas-relief, a sculptured metope from the temple at Selinus and now in the museum at Palermo, which celebrates the decapitation of Medusa by Perseus, shows under the arm of the victim a horse — Pegasus of course, since that winged wonder sprang from the blood of Medusa, and it shows how inappreciative this particular sculptor was of the proprieties of artistic truth that Medusa is shown as a monster and not as the creature of rare but fatal beauty that the closer interpretation of the myth shows her to have been: that a beautiful horse should spring from the blood of a beautiful woman is an appropriate climax, but that a creature endowed with such beauty and intelligence should spring from the polluted blood of a monster is unlikely. Although the sculpture is not, of course, a tombstone, it has so much the air of one that



Archaic painted Decoration.[2]



Archaic Centaur Figurines.[2]

[1] From the *Gazette des Beaux Arts.*
[2] From Müller's "*Denkmaler der alten Kunst.*"

it is a temptation to consider it among the first of the long series of sepulchral sculptures that lined the Street of Tombs at Athens, the Via Sacra at Rome, and similar avenues of the dead elsewhere, on which the horse was sometimes introduced, first because of its symbolic connection with death, and afterwards as a conventional form

Centaurs and Chimera.[1]

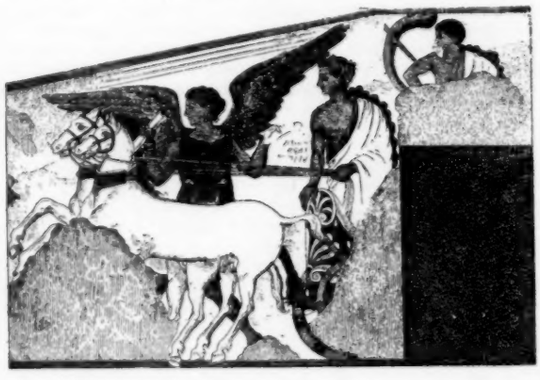
of decoration. In one of the most common forms, though perhaps not the simplest or the earliest, the symbolic element is represented by a horse's head in the upper corner of a bas-relief as if looking through a window from the outside at the friends of the deceased enjoying the funeral-feast within. On, at least, one of these reliefs there is a muffled figure seated somewhat apart from the feasters which may be intended to represent the dead man for whom the horse on the outside is waiting. In later forms a greater variety of treatment was practised and the equine symbol expanded till, as on a sepulchral urn in the British Museum, it is represented by a four-horse chariot driven by a winged genius. In this last case the horses seem to be introduced amid the rather rich decoration quite as much as a piece of conventional ornament as because of its symbolic value. Another type of equestrian sepulchral sculpture is found in the somewhat noted slab or stèle which formed the monument of the soldier Dexileos, son of Lysanias, which was found in 1863 and reërected on the very spot where it was originally placed 393 years before our era. In this case the horse — Dexileos is shown as riding over a fallen enemy — was introduced either as being an appropriate decoration for the monument of a soldier who fell at the Battle of Corinth, or because of the symbolic connection between death and the horse. This bit of sculpture is of marble and still shows traces of color, while the bridle and some other portions were of bronze.

Perseus and Medusa. Metope from Selinus.

Sepulchral Bas-relief. — The Funeral Feast.[2]

Bellerophon and Pegasus. — An Antique.

The winged Mercury who piloted the dead to Charon may have suggested the winged steed — who was not, so far as known, employed in a similar way — and so brought about the adoption of the common horse as a funeral emblem. But some writers see in this employment of the horse only an intention to symbolize the entrance of the departed upon a journey, while in the paintings in the catacombs the horse is understood to symbolize the swiftness of life.



Fresco from the Golini Tomb. The Soul quitting the Earth. — Etruscan Museum at Naples.[3]

This connection of the horse with death makes it appear quite natural that as consolation to the bereaved parents a gilded bronze equestrian statue should have been set up in Brixia on the death of a child only in his sixth year, a fact which otherwise seems merely whimsical.

Chiron. — Chiron, the most famous of the centaurs, was a son of Saturn, and lived on Mt. Pelion. He was instructed by Diana and Apollo, and so excelled in medicine, hunting, music, gymnastics and prophecy that the most distinguished Grecian youths were sent to him for instruction, such as Peleus, Achilles and Diomedes. Chiron was a friend of Hercules and was immortal.

The Centaur. — "The gallop of a well mounted horse is still a unique spectacle, as is every equestrian exercise performed to display, in their moments of common activity and accord, the two most intelligent and finished creatures in form that God has made. Separate them, and it might be said that each one of them is incomplete; for neither of them has any longer his maximum of power: couple them, mingle the man with the horse, give to the torso originality and will, give to the rest of the body the combined attributes of promptness and vigor, and you have a being of sovereign force, thinking and acting, courageous and rapid, free and controlled. Greece imagined nothing grander or more natural. She has shown in this that the equestrian statue was the last work of human sculpture; and of the monster of true proportions, which is the audaciously represented alliance of a robust horse and a handsome man, she has made the educator of her heroes, the inventor of her sciences, the most agile of preceptors, the bravest and handsomest of men." — *From Fromentin's "A Year in the Sahel."*

The Patrons of the Horse. — "The gods had often a liking to transform themselves into horses; so much so that the sacrifice of the god, that is, the god's death, is represented by the death of the horse. Every one knows that gods and heroes delighted in showing themselves good horsemen, or, at least, good charioteers. On this account, it would be difficult to say to which god in particular the horse is sacred. The Vedic Açvinâu, the Vedic Aurora, who wins the race in her chariot, Agnis, Savitar, Indras, victorious and splendid by means of their steeds, the hippios Passidon, the hippeia Athene, the hippodameia Aphrodite, the horsemen Dioscuri, Mars, Apollo, Zeus, Pluto and the German Wuotan (like his *alter ego* St. Zaccheus) never show themselves otherwise than on horseback; hence the horse was naturally sacred to all of them. In the Christian faith, the innumerable gods of the ancients having become innumerable saints (when they were not so unfortunate as to degenerate into devils) the horse is now recommended in its stable to the protection of several saints, from the obscure Sicilian St. Aloi to the no less modest Russians St. Froh and St. Laver, who take the horse, as well as the mule, under their especial protection, not to speak of the glorious horsemen St. George, St. Michael, St. James, St. Maurice, St. Stephen, St. Vladmir and St. Martin, especially revered by warriors, and in whose honor the principal orders of Knighthood in Europe were founded." — *Zoölogical Mythology by Angelo de Gubernatis.*

[To be continued.]

ITALIAN CITIES.[1] — III.

MILAN. — I.

Persian Sculpture from Susa.

MILAN is the first large city which one meets with in upper Italy after leaving Turin. Lombardy, of which Milan is the capital, was formerly a lacustrine region whose earliest inhabitants dwelt in huts built on piles. The Etruscans, doubtless, were the first who brought into this Cisalpine province artistic tastes and manners. Later the Gauls brought in their light-hearted and turbulent moods, their gaiety and vivacity — and of all the people who inhabit Northern Italy, the Milanese is the one, who, through the delicacy of his intelligence and the enthusiasm of his nature, most closely approaches the Frenchman. He is capable of irony, and delights in pleasantries — a rare thing on the peninsula. He thoroughly loves to eat, and does not despise the juices of the vine. He enjoys a reputation for gluttony, of which he is rather proud; and, in fact, there is a proverb which says that the Milanese always has a greasy plate and a mantle full of holes. Almost all others of his compatriots generally prefer to have a fine mantle, even at the expense of an empty stomach. The Lombard territory is well calculated, moreover, to determine in its inhabitants an immoderate appetite, for it is prodigiously fruitful, and its natural fecundity has been increased tenfold by the work of man.

Works of irrigation make it possible to obtain from its artificial meadows seven crops of hay each year. The Alps which bound the plain on the north act the part of collectors, which bring toward the plain clear and fertilizing waters. This territory is more rich in rivers than any other in Italy: the Adda, the Oglio, the Tessino, the Adige and the Mincio, to mention only the most important, traverse it from north to south, and form in their courses those admirable lakes around which there are so many agreeable summer resorts. Broad canals connect these great water-courses, which flow into the Po, and serve to distribute in every direction the means of irrigation from which the native reaps full profit. These immense works of canalization are due to the genius of the greatest architects of Italy, and amongst them can be counted the great Leonardo da

[1] From Müller's "*Denkmaler's der alten Kunst.*"
[2] From *L'Art.*

[1] Continued from No. 638, page 126.

Vinci, who was considered almost a mad man when he for the first time spoke of connecting the Mincio and Tessino.

The monks of Clairvaux, who at the commencement of the twelfth century founded, under the direction of St. Bernard, a branch of their institution at a short distance from Milan, have contributed in large measure by their colonies and their teachings to the development of the agricultural prosperity of this territory and the multiplication in it of the means of irrigation. Thus Lombardy can be considered the real garden of Italy by reason of the importance and the quality of its products, if not because of the mildness of its climate. Cattle-grazing is here carried to its greatest development, and Lombardy furnishes butter not only for the whole kingdom of Italy, but also for a great portion of France. Even before water was used for fertilizing the ground by means of artificial canals, this province was already a great dairy country; for the historians of antiquity recount an amusing episode which took place when Julius Cæsar spread over Cisalpine Gaul with his legions. Valerius Leo offered hospitality to the conqueror, and set before him asparagus dressed in butter. Cæsar's generals, who knew nothing about this substance, but were wont to eat everything in oil, made faces at it, and one of them cried out, "What is this foul grease? We eat our asparagus in oil;" but Cæsar, overcoming gastronomic prejudices which rendered his companions in arms distrustful, ate the asparagus after the Milanese fashion and found it excellent. This tale proves that even at the table glory is never *de trop*. They say that a well-filled stomach and good digestion assure good humor, and it is doubtless because of this that the Milanese pass for being the gayest people not only in all Italy, but throughout the whole world. To them serenity is never wanting, and in order to prove this, in order to satisfy their love of hilarity, the ordinary limits are not sufficient, and they prolong by a week the duration of the carnival, so that while through the whole peninsula the people are already practising the privations of mid-Lent, at Milan they still dance and rejoice for a whole week longer.

Finally, there is at Milan a marble statue which the people designate by the sobriquet of "Man of Stone," and which, to them, is the very incarnation of Milanese wit. This statue has some analogy with that of Pasquino at Rome, which, as we know, was in past time the responsible steward of popular satire. At Milan, when any one invents an epigram against the constituted powers, he goes and hangs a placard about the neck of the Man of Stone. The next day all Milan knows the epigram by heart. The curious thing is that it is not known surely what is the origin of this statue. Some believe they see in it the figure of a Milanese archbishop, but according to the most plausible interpretation, it is a statue of Cicero, who really governed the city of Milan for some time. A thing which confirms this belief is that the statue is conceived in the purest Roman style, and that on the pedestal may be read this sentence of Cicero's: "*Carere debet omni vitio, qui in alium dicere paratus est*," which means that when one wishes to criticise another, he should himself be free from all reproach. Here is a sentence which would render the exercise of criticism most difficult if it should be rigorously observed, and one which Cicero has been the first to not always respect, for he was more eloquent than virtuous.

The city of Milan has preserved the civic character of its past days. Its irregular and tortuous streets, its narrow places recall to us clearly the time when men huddled together as much as possible in order to make the defence of a city most easy. It has been destroyed and rebuilt on several occasions, so that there remains in the walls no trace of Roman architecture except the columns of San Lorenzo, which will be mentioned later. The finest monuments belong to the century which preceded the Renaissance, and to that which marked the fullest blossoming of the arts in Italy. The feeling which rules in them (I speak here of those of the earliest epoch) is Gothic, but it is Gothic of a sort which is already corrupted by contact with Italian feeling, and which has undergone certain alterations. The Lombard artists are the ones who introduced into the peninsula the architecture of the North. They served as go-betweens between the art of Scandinavia and the indigenous art, and this specialty so distinguishes them from other Italian artists that these latter designated them (probably in scorn) by the title of Germans.

The Cathedral of Milan is the most remarkable monument of Northern Italy, except the Church of St. Mark and the palace of the doges at Venice. So proud is the Milanese of this, and justly, that while the Venetian travelling in a distant country thinks of the Grand Canal and the Lido, while the Florentine regards the Lungarno, the Roman the Corso, and the Neapolitan Vesuvius, the Milanese thinks of the Cathedral, and heaves a sigh. The Cathedral — it is Milan itself! and if you encounter on the boulevards a stranger who wears as a locket on his watch-chain a little jewel representing in miniature a Gothic cathedral glistening with pinnacles, you may be sure that he is a Milanese.

I do not know why people have persisted up to the present time in classifying this edifice as a Gothic monument. Strictly speaking, it is Gothic because it is neither Greek, nor Roman, nor Italian. On what other reasoning can it be a Gothic monument? Here is a question to which many critics will be much embarrassed to give an answer. I know many edifices which are considered as belonging to the style which bears this name, and which, nevertheless, are as much like one another as a night-cap is like a travelling-bag.

As to Milan Cathedral, in spite of the Gothic character which I take the liberty of disputing, it is unquestionably one of the finest *chefs-d'œuvre* of architecture. The fineness of the work, the elegance of its lines, make it an agreeable and charming object. Its façade, divided into five bays by means of six pilasters which cut it vertically, has a very imposing air, although the ornamental part is very much overdone and, bearing here and there traces of the taste of the Decadence, injures the effect; but when we overlook the detail and only consider the general effect, we are surprised and ravished by the harmony which exhales from it, and especially by the air of easy grace which is given to this colossal mass by the thousands of pinnacles which surmount it, and which are dominated in their turn by the central tower, which is itself surmounted by the statue of the Virgin. Thanks to the unheard of finish of the design, the marble, chiselled, cut and pierced assumes a transparent fluidity, and seems to become a vaporous and impalpable substance. The aspiration towards Heaven, which is the proper aim of religious edifices, is here realized and in an almost supernatural manner, and the innumerable statues which people its pinnacles, and which show themselves on the turrets, give it a mysterious animation and the semblance of a mystic rite petrified by the breath of the Deity. The statues which ornament the exterior of the Cathedral are in number nearly six thousand. This figure may be taken as nearly exact. We see them everywhere; every pinnacle is terminated *en ecrotère*. If all these statues should be collected in a gallery, there would be formed thus one of the finest museums in the world, for they would serve to reconstitute the history of Italian sculpture from the fourteenth century to the seventeenth.

Milan Cathedral is Gothic in this — the severity of its interior ordonnance, which causes it to rank among the first edifices of the epoch. It must be remembered that the churches of the Renaissance did not reflect the religious sentiment as the people before the Protestant reform conceived it. Art, from the time of Raphael and Michael Angelo, gave to religion an outward fashion more agreeable, endowed with greater grace, more jocund. One would say that man had effected a reconciliation with God, and that the relation between human beings and the Divinity had become more easy, more affectionate, more loving. In the Church of St. Ignatius at Rome, where we find united all the characteristics of the Renaissance style, we can recognize more than elsewhere the distinctive signs of this new architecture, which marked a radical evolution in the human spirit. Here the divine power appears to man surrounded with pomp and light. It is enveloped with all the attributes of wealth, and seems to spread about it rest, and joyousness and gaiety, and to encourage man to hope and believe in future happiness. Before the Reform, or rather before the Renaissance, when pagan Hellenism had not yet corrupted the genius of Catholicism, the temple preserved its repellant air of severity, by reason of its shadowy and ill-lighted interiors, and it is perhaps this more than anything else which distinguishes Gothic churches from those which belong to other styles. Under the Gothic vault the spirit of God, enveloped in shadow hovers silently, and only manifests itself by those rays of light which pass through the stained windows and cast their mysterious light into the nave. In the shadows of the vault one feels there wanders the parting malediction of Golgotha; and these vast naves, supported on gigantic piers, are well arranged to shelter the meditation and dreams of the crowd which does not yet dare to raise its eyes towards Heaven. From this point of view the monuments which precede the end of the fourteenth century are very curious studies, for they afford us the image of a religion and a kind of devotion which disappeared after that date.

The body of Milan Cathedral, from the great doorway to the end of the apse, measures 148 metres and 10 centimetres, with a breadth of 57 metres. The total length of the transepts with the chapels is 87 metres. The nave is 47 metres high by 19 in width, and the total height from the centre to the feet of the statue of the Virgin which crowns the central tower, is 108.5 metres. By way of comparison, here are some figures relating to the best known religious monuments:

The Cathedral of York, burned in 1828, and which had already been rebuilt in 1075, has a length of 142 English feet, a breadth of 105 feet at the western extremity and 109 feet at the opposite end. The total height of the nave is 99 feet; the ceiling of the central tower is 213 feet from the ground. A window which opens at the extremity of the gallery, and which is entirely filled with stained-glass, is 65 English feet in height by 32 in width.

The Cathedral of Cordova, built in the year 792 by the King Abderame, is 134 feet long and 387 wide. This church contains nine naves formed by 1018 columns, the smallest of which are seven feet and the largest 11 feet and three inches high.

The Escurial, begun in 1557, to which was given the form of a gridiron, in honor of St. Lawrence, is only 51 feet in height and 637 feet in length.

In the Alhambra at Granada, an ancient Moorish fortress, the Lion Court is 100 feet square.

The Church of St. Denis, near Paris, is 335 feet long by 90 feet high. It was built in 1152 by Suger.

The famous Column of the Grand Army on the Place Vendôme, Paris, is 136 feet high.

The Church St. Geneviève, to-day transformed into the Panthéon, is also one of the most remarkable structures by reason of the vastness of its proportions. The diameter of the dome is 68 feet. The 32 columns which surround it are 34 feet in height, and the highest point of the edifice is 237 feet from the sidewalk.

The Cathedral at Rheims, which Stendhal considers one of the most beautiful churches in France, was built in 840, and measures 430 in length by 110 feet in height.

The Cathedral at Strasbourg, which is perhaps the only purely Gothic monument on the Continent, was finished in 1275. The first stone was laid in 1015. The tower, finished in 1439, is, without contradiction, the highest bit of masonry which exists in Europe. Its height is 426 feet.

The tower of St. Etienne at Vienna is 414 feet high, four feet less than that at Strasbourg.

The tower of St. Michael at Hamburg is 390 feet.

The famous tower of Pisa measures 193 feet, but it leans toward the south about 12 feet, which gives it a mean inclination of six feet in the hundred.

St. Sophia, at Constantinople, measures 270 feet in length by 240 feet in width, from north to south. The height of the dome above the level of the ground is only 165 feet.

The legendary pyramid of Egypt, from which, according to the saying of Bonaparte, "forty centuries look down on the French Army," is 146 metres.

The flèche of the Invalides, at Paris, reaches a height of 380 feet above the ground.

The pyramid of Cholula in Mexico is only 162 feet high.

The towers of Notre Dame, at Paris, measures 240 feet in height. The total length of this church is 409 feet. It interior width at the crossing is 150 feet; the width of the nave is 40 feet. The nave of the cathedral at Strasbourg is 43 feet, and its interior length is 145 feet.

The Church of St. Paul, at London, is 500 feet in length by 169 feet in width. The height of the dome is 319 feet.

The most curious figures are those connected with the proportions of St. Peter's at Rome. The total length of the basilica, including the portico and thickness of the walls, is 660 feet. The foundation walls are 21 feet and 7 inches thick. The walls of the peristyle is 8 feet and 9 inches thick, and the peristyle is 39 feet and 3 inches in width. The interior length of the crossing of St. Peter's is 98 feet. The interior width of the nave, without the aisles and chapels, is 82 feet. The total height from the floor to the summit of the cross which surmounts the dome is 408 feet. The height of the dome under the key-stone is 249 feet. The interior height of the façade is 259 feet.

NOTES AND CLIPPINGS

The Glass Windows in England. — It is curious that England is mainly indebted to an archbishop and an abbot for the introduction of the glass window. At the commencement of the seventh century this country had no "glass-makers." At that period the windows of private dwellings, as well as of churches, were filled with linen cloth, or with wooden lattices. In the latter part of the century, Wilfred, when Archbishop of York, proceeded to effect extensive repairs in the Cathedral, at that time in a ruinous state, and he is described as having "put glass into the windows," a provision previous unknown. Possibly he derived aid from his friend and contemporary Benedict Biscop, Abbott of Wearmouth, who about the year 674 brought glass manufacturers over from France to glaze the windows of his monastery and church. The venerable Bede states that up to that time the making of glass was unknown in England. He also asserts that these French artisans not only executed the work assigned to them by Benedict, but gave instructions to the English "in the art of making glass for windows, lamps, and other uses." Five hundred years after the era of Biscop and Wilfred, windows of glass existed in English houses, but despite all that had been done to naturalize this industry, the glass was still imported from the Continent. Five hundred years later on, we hear of Venetian artists at Lambeth, under the patronage of Villers, Duke of Buckingham, engaged in making "glass-plate" for coach windows and mirrors. This brings us down to 1673. A century more finds the French making great progress in the production of large plates, in which they soon met with formidable rivals on this side the Channel. The manufacture of glass of some kind was fairly established in England more than a hundred years before the Venetian artists produced "glass-plate" at Lambeth, this early manufacture being located at Clutched Friars and the Savoy. But plate-glass was the great achievement so far as windows were concerned, and to the perfection of this branch we owe important practical results, affecting our everyday existence. — *London Standard.*

The Baths at Monterey, Mexico. — Scattered through the gardens of the Bishop palace of Monterey, are the most charming baths which furnish one of the few pleasures indulged in by these plain-living people whose pleasures are so few. Many of the baths are evidently very old, judging by their massive proportions and barbarous simplicity, but no one here seems to know their history. The bath proper is a huge basin about four feet deep with its rim raised slightly above the ground. Around this is a wide paved space, and the whole is enclosed by another thick adobe wall about eight feet high, making a circular room more than twenty feet in diameter. All around the inside are broad, low stone seats, and over one side is a trellis of grape-vine which makes a dressing-room sheltered from the sun. Baths, walls and seats are stained a soft, warm red, with patches of green moss here and there, and the room is filled with sunshine, warmth and color in such ideal combination that even Ruskin would find nothing to complain of. Another suggestion of Arcadia is in the entrance to the bath which is a simple arch in the wall with no provision whatever by the architect for shutting out observers. At present a piece of coarse linen flaps its ineffectual length over the arch as a concession to nineteenth-century modesty, I suppose. During the afternoon the baths and gardens are crowded with people. After their bath the women walk or ride home on the street-car in decidedly negligé costume, and with their long, black hair streaming in damp ripples over their shoulders, entirely unconfined by hairpins or head-covering of any description. — *Ellen M. Slayden, in Boston Advertiser.*

St. Michael's, Coventry, Restored. — The restoration of St. Michael's Church, Coventry, was practically completed recently by the replacing of the top stone of the steeple, which is the tallest of the three tall spires. The work was undertaken over three years ago, one of the earliest steps being an appeal by the late vicar through the columns of the *Times* for national help in restoring the structure. The ceremony yesterday was performed by Mr. G. Woodcock, a contributor of £10,000 to the fund, who after fixing the stone, assisted Mr. Thompson, the contractor, in replacing the weathercock, at an altitude of 303 feet. A short religious service was gone through, and there were some brief congratulatory speeches, and when the weathercock swung round with the wind the crowds who had assembled at the various points to witness the ceremony cheered lustily. There still remains some carving to be done, and the statues have to be replaced; and these and other details, such as the removal of the scaffolding, will occupy the workmen some months yet. The restoration has cost between £30,000 and £40,000. — *The London Times.*

TRADE SURVEYS

An analysis of railroad, commercial and financial statistics for the past month as compared to the same month last year shows some interesting features which are ordinarily overlooked. A rearrangement of conditions and earnings as compared to corporate properties as compared to the producing capacity of the country is rapidly increasing. The power of railroad managers has contracted and rates almost everywhere have declined. The volume of traffic as compared to a year ago is in the aggregate heavier according to the reports available, but it is the habit of those who control the publication of information of this kind to withhold much information that would be of a disturbing or disappointing character, hence it is impossible to present conclusions that conclude. Business men and financiers are obliged to accept results the correctness of which they doubt; manufacturers can see more clearly as they gather their business as they go; but money-lenders, bankers, railroad-builders and promoters of great enterprises are obliged to grope in the dark to a certain extent. The fog surrounding our business affairs is very light but enterprise is unwilling to be expended in an uncertain direction. The talk in the trade circles to-day is that with the termination of the political contest a vast amount of new business will be rushed in the market. The large manufacturers, East and West, corroborate this statement. The manufacturers fear a disadvantageous decision of this much more than they have occasion, for the necessities of the country are such as to make it practically impossible for any permanent harm to be done to our industries by any reduction of duties that can be made. The reaction apparently has already set in against even moderate reductions. A great many who theoretically favor reductions and who still believe in that policy are so mixed up with the country's industrial prosperity that they are weakening in their anxiety to see the great experiment made. The manufacturers of the Northwest or a great many of them have recently expressed the opinion that with the greater control over railroad transportation and with a better prospect for a satisfactory disposal of their crops they will be sufficiently satisfied to let other things go for the present. Manufacturers and capitalists from the North who have very recently scoured through there themselves to see what was going on, assure us that there is an undertone in the Southern States decidedly in favor of pursuing such a course as will keep mills and factories busy. If reduced duties are necessary for that end their strongest support will be given to it. Their desire is that American activity must be maintained and that they will advocate and stand by such Governmental policy as will lead to that consummation. In so deciding, the manufacturers and business men do not declare themselves for or against this or that economic policy, but they simply place themselves on practical good sense grounds and will let that pilot them to their destination. Further advices from architects and builders within the past two weeks show that an increased number of permits have been taken out and that a great deal of work will be pushed through between now and fall. As stated some time ago, house-building is being vigorously pushed and relatively more money is being expended in that direction. There is an urgent demand for tenement-houses worth from $1,000 to $2,000 in the States west of Pennsylvania than there ever has been. Chicago lumber merchants have been doing a good business throughout the Western and Northwestern States all through, and particularly of this fact nail-makers speak of this same thing.

A large amount of cast-iron pipe has been ordered recently for water-works contracts. Tank-manufacturers are quite busy now and large orders for the construction of gas-works are placed. Engine-builders are full with work for small engine and boiler construction. Saw-mill work and iron-rail manufacturers have started in recently on orders for the fall and winter. There is an excellent condition of affairs among the smaller industries. The work of completing previously undertaken contracts amounts to a good deal. The houses and shops built last year are calling for a great deal of furnishing this year. The large crops anticipated in the West have laid the foundation of confidence for the heavy winter's business. The leading clothing manufacturers of New York and Philadelphia strengthen the statement made as to the promised activity. Nearly all of them are oversold. The hosiery manufacturers would be oversold but for the extraordinary importations of hosiery and woollen goods. Those industries not affected by importations are quite busy. Even those who are affected by heavy importations are gradually working themselves on safer grounds. This state of affairs is indirectly of benefit to the people at large who profit by the disturbed condition going on in all our railroads and among money lenders in the employment of their money. The financial reviewers overlook these benefits because they keep their eye upon the advantage of the mill-men or manufacturers and overlook the benefit that a great body of the people derive from the vigorous operation of the losses of trade and commerce.

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